INDEX TO VOLUME X

GENERAL ALPHABETICAL INDEX

Entries from the Synopsis of Periodical Literature are indicated by S. (Synopsis); from the Analysis of Current Electrochemical, Chemical and Metallurgical United States Patents by P. (Patents); from the Digest of Electrochemical United States Patents Prior to July, 1902, by D. (Digest).

A

Abbe Engineering Co..... 445
Abbe, Paul O..... 445
Abrasion and dust losses in ore drying. Dietz and Keedy. (S.)..... 558
Acid-proof linings of bakelite..... 53
Acids. Chemically pure. Manufacture. Baker 719
Adobe as building material..... 659
Agglomeration of fine materials. Landis 164
——(See also Balling, Blast Roasting Briquetting, Sintering.)

AGITATOR:
——Application of compressed air. Trent. (S.) 429
——Mechanical design 538
——Hafer. (P.)..... 306
——Hammond. Pulp. (P.)..... 489
——Parral tank. MacDonald.....48, 434
——and classifier. Fairfield. (P.)..... 177
Agricultural chemistry.....609, 625, 636
Air, compressed for pumping. Abrams.. 316
——for agitation. Trent..... 429
Air-lift system of pumping. Abrams.... 319
Air-Blast Heater. Hohmann (P.)..... 820
Air. Measuring small quantities of low-pressure air. Weymouth. (S.). 315
Air. Saltpeter. (See Nitrogen atmospheric fixation.)
Alaska outlook 563
Alcohol from paper-mill wastes..... 401
Aldehydes. Determination..... 605
Alderson, Victor C..... 446
Alkali-proof ebonite. Wilderman..... 629
Allgemeine Elek. Ges..... 501
Allotropy of iron and silver iodide. Benedicks 692

ALLOYS:
——Aluminium. Wilson. (S.)..... 756
——Aluminium. Deterioration..... 749
——Aluminium and zinc..... 424
——Anticorrosive. Jacquier. (P.)..... 308
——Cobalt-chromium. Haynes..... 804
——Coinage alloys. Annealing. Rose.. 724
——Copper. Tensile tests at higher temperatures. Huntington 724
——Copper-zinc. Bancroft and Lohr.... 690
——Copper-zinc. Inversion. Carpenter. 224
——Copper-zinc. Jones. (P.)..... 816
——Copper-zinc. Microstructure. Carpenter 725
——Copper and zinc simultaneously deposited by electrolysis. Thompson 458
——Electrolytic Refining. Betts. (P.)..
——Eutectic alloys for production of porous storage battery plates. Hannover 509
——Heating in Vacuo. Turner..... 225
——Heusler. Take and Heusler..... 403
——Heusler. Magnetic properties and microstructure 403
——Influence of oxygen on properties. Law. 725
——Iron-carbon and iron-silicon. Magnetic properties. Gumlich..... 402
——Iron-nickel. Non-corrosive. Carnahan. (P.) 818
——Iron-nickel-copper. Clamer. (P.).... 308
——Iron-nickel, iron-cobalt, nickel-cobalt Magnetism. Weiss..... 404
——Magnesium-casting. Hoffman and Suchy. (P.) 491
——Magnetic properties 402
——Manganese Bronze. Corse and Skillman 595
——Measurement of compressive strength. Huber 96
——Nomenclature. Rosenhain..... 226
——Properties at high temperatures. Bengough 225
——Pyrophoric. Krieger. (P.)..... 375
——Lesmüller. (P.)..... 375
——Silver-bismuth. Refining. Lacey.... 747
——Substitute for brass. Gross. (P.).. 375

ALLOYS: (Continued.)
——Temperature and strength..... 160
——(See also brass and ferroalloys.)

ALUMINA:
——as drying agent. Johnson. (S.).... 735
——Cowles process 659
——in copper slag formation. Bellinger. (S.) 693
——Buchanan and Lee..... 795
——in iron blast-furnace slag. Johnson. 812
——Nitrogen fixation by alumina and carbon. Tucker and Read..... 745
——potash, alumina, silica from feldspar. Hart 634

ALUMINIUM:
——Advances in metallurgy..... 650
——Alloys. Light. (S.)..... 756
——Alloys deterioration 749
——Alloys with zinc..... 424
——Alloy with titanium. Rossi. (P.).. 308
——Electric equipment of Whitney, N. C., plant. 763
——for water purification..... 351
——in France 655
——International aluminium syndicate.. 425
——Oxy-acetylene welding. Carnevali... 726
——Pickling before plating. Jahn. (P.). 552
——Plant in Whitney, N. C..... 445
——Serpek process 255
——Solder. Erkens. (P.)..... 556
——Solder. Hartmann. (P.)..... 309
Alundum refractory. Boeck..... 581
——Fitz Gerald 129
Alundum extraction thimble for copper determination. Bahney 737
Alunite. Source of potash. Waggaman. 734
Amalgamated Copper Co..... 11

AMALGAMATION:
——Electrolytic. Alling. (P.)..... 51
—— Andreoli. (D.)..... 765
—— Danckwardt. (D.)..... 122
—— Edwards. (D.)..... 62
—— McNulty. (D.)..... 765
—— Pelatan and Clerici. (D.)..... 122
—— Potter. (P.)..... 752
——Amalgamator for gold. Frey. (P.). 552
——(See also Gold and Silver.)
Amalgams. Thallium. Richards and Daniels 619
Amalgams. Vapor pressure and e.m.f.... 619
American Carbon & Battery Co..... 121
American Chemical Society. Washington meeting 66
American Cyanamide Co..... 667
American Electrochemical Society, 66, 126, 194, 390, 710, 745
——Assisted research fund..... 406
——Boston meeting 257, 285
American Foundrymen's Association. Buffalo convention 702
American ingot iron for metallic roofing. Aupperle 57
American Institute of Chemical Engineers, 8, 10, 710, 770
——Proposed code of ethics. Richards.. 776
American Institute of Metals, Buffalo Convention 702
American Institute of Mining Engineers, 66, 710
——Cleveland meeting 801
——Iron and steel division..... 326
——Japan excursion 15
——New York meeting..... 161
——Situation in Stone and Corning.... 512
American Iron and Steel Institute..... 710
——Electric steel refining..... 371
——Pittsburgh meeting 772
American Museum of Safety..... 113
American Rolling Mill Co..... 444
American Vanadium Co.....237, 763
American Zinc, Lead & Smelting Co.... 377
Ammonia. Synthetic. Bernthsen..... 637
Ammonium sulphate from ammonia and sulphur dioxide from coal gases. Feld. 395
Anaconda. Chemistry of reduction processes. Laist 592

ANALYSIS:
——Alundum extraction thimble for copper determination. Bahney..... 737
——Barium 645
——Combined potash bulb and drying tube. Vanier..... 380
——Combustion train for electric furnace. Vanier..... 380
——Compressed oxygen for estimating carbon in ferroalloys..... 750
——Cupellation of silver-lead buttons. Benner and Hartmann. (S.)..... 246
——Determination of methane in producer gas. Arndt..... 391
——Electro-analysis with acidified chloride electrolytes. Schock and Brown 684
——Electrolytic assay of gold solutions. Crighton. (S.)..... 120
——Electrolytic determination of lead.... 108
——Electrolytic, of lead. List..... 135
——Errors in gas analysis. Burrell and Seibert 690
——Free sulphur in spent oxide..... 174
——Gas analysis. Williams..... 382
——Hydroxide reactions 645
——Light platinum electrodes. Gooch and Burdick. (S.)..... 559
——Manganese 645
——Methods of sampling and analysis. U. S. Steel Corporation.....650, 668
—— Ores containing the platinum group metals. Dart..... 219
——Oxalate-permanganate method for determining copper 377
——Oxygen in iron. Walker and Patrick 629
——Pig iron. U. S. Steel Corporation.. 668
——Precipitation of ammonium sulphide group of metals..... 645
——Quick combination methods of assays. Levings..... 549
——Refined in ore testing..... 449
——Samples. Preparation. Blyth. (T.) 815
——Silver ores containing cobalt, nickel and arsenic. Handy..... 688
——Standard methods of sampling for check analysis. Association of American Steel Manufacturers.. 701
——Sulphur in oils..... 635
——Strontium 645
——Typical analyses of iron blast-furnace gases 713
——Water in petroleum..... 635
——Zinc dust. Sharwood. (S.)..... 376
Analytical chemistry at congress, 604, 615, 623, 635, 645
Annealing of coinage alloys. Rose..... 724
Annealing low-carbon steel. Coarse crystallization. Sherry 666
Antimony by electrolysis from sulphide. Engelhardt and Nettel. (D.)... 502
——Electrolytic process. Engelhardt. (D.) 188
——from stibnite. Fink..... 296
——in tough-pitch copper. Johnson..... 726
Argall, Philip.....61, 187
Arizona Copper Co..... 196
Arsenic. Electrolytic process. Engelhardt. (D.) 188
Arsenic ores. Vacuum furnace treatment. Fink 296
Arsenical silver ore. Treatment. Fink. (P.) 177
Arsenous chloride. Volatility..... 605
Asphalt 614, 635
Asphalt 635
Assay. (See Analysis.)
Association of American Steel Manufacturers. Standard methods of sampling for check analysis..... 701
Atlas Dryer Co..... 798
Atmospheric nitrogen fixation. (See Nitrogen.)
"Atomized" lead and zinc for precipitation of gold and silver. Neil. (P.), 180, 431
"Atomized" lead and zinc. Neil (P.).181, 305
Atomic weights 623

INDEX TO VOLUME X

GENERAL ALPHABETICAL INDEX

Entries from the Synopsis of Periodical Literature are indicated by S. (Synopsis); from the Analysis of Current Electrochemical, Chemical and Metallurgical United States Patents by P. (Patents); from the Digest of Electrochemical United States Patents Prior to July, 1902, by D. (Digest).

A

Abbe Engineering Co..... 445
Abbe, Paul O..... 445
Abrasion and dust losses in ore drying. Dietz and Keedy. (S.)..... 558
Acid-proof linings of bakelite..... 53
Acids. Chemically pure. Manufacture. Baker 719
Adobe as building material..... 659
Agglomeration of fine materials. Landis 164
——(See also Balling, Blast Roasting Briquetting, Sintering.)

AGITATOR:
——Application of compressed air. Trent. (S.) 429
——Mechanical design 538
——Hafer. (P.)..... 306
——Hammond. Pulp. (P.)..... 489
——Parral tank. MacDonald.....48, 434
——and classifier. Fairfield. (P.)..... 177
Agricultural chemistry.....609, 625, 636
Air, compressed for pumping. Abrams.. 316
——for agitation. Trent..... 429
Air-lift system of pumping. Abrams.... 319
Air-Blast Heater. Hohmann (P.)..... 820
Air. Measuring small quantities of low-pressure air. Weymouth. (S.). 315
Air. Saltpeter. (See Nitrogen atmospheric fixation.)
Alaska outlook 563
Alcohol from paper-mill wastes..... 401
Aldehydes. Determination..... 605
Alderson, Victor C..... 446
Alkali-proof ebonite. Wilderman..... 629
Allgemeine Elek. Ges..... 501
Allotropy of iron and silver iodide. Benedicks 692

ALLOYS:
——Aluminium. Wilson. (S.)..... 756
——Aluminium. Deterioration..... 749
——Aluminium and zinc..... 424
——Anticorrosive. Jacquier. (P.)..... 308
——Cobalt-chromium. Haynes..... 804
——Coinage alloys. Annealing. Rose.. 724
——Copper. Tensile tests at higher temperatures. Huntington 724
——Copper-zinc. Bancroft and Lohr.... 690
——Copper-zinc. Inversion. Carpenter. 224
——Copper-zinc. Jones. (P.)..... 816
——Copper-zinc. Microstructure. Carpenter 725
——Copper and zinc simultaneously deposited by electrolysis. Thompson 458
——Electrolytic Refining. Betts. (P.)..
——Eutectic alloys for production of porous storage battery plates. Hannover 509
——Heating in Vacuo. Turner..... 225
——Heusler. Take and Heusler..... 403
——Heusler. Magnetic properties and microstructure 403
——Influence of oxygen on properties. Law. 725
——Iron-carbon and iron-silicon. Magnetic properties. Gumlich..... 402
——Iron-nickel. Non-corrosive. Carnahan. (P.) 818
——Iron-nickel-copper. Clamer. (P.).... 308
——Iron-nickel, iron-cobalt, nickel-cobalt Magnetism. Weiss..... 404
——Magnesium-casting. Hoffman and Suchy. (P.) 491
——Magnetic properties 402
——Manganese Bronze. Corse and Skillman 595
——Measurement of compressive strength. Huber 96
——Nomenclature. Rosenhain..... 226
——Properties at high temperatures. Bengough 225
——Pyrophoric. Krieger. (P.)..... 375
——Lesmüller. (P.)..... 375
——Silver-bismuth. Refining. Lacey.... 747
——Substitute for brass. Gross. (P.).. 375

ALLOYS: (Continued.)
——Temperature and strength..... 160
——(See also brass and ferroalloys.)

ALUMINA:
——as drying agent. Johnson. (S.).... 735
——Cowles process 659
——in copper slag formation. Bellinger. (S.) 693
——Buchanan and Lee..... 795
——in iron blast-furnace slag. Johnson. 812
——Nitrogen fixation by alumina and carbon. Tucker and Read..... 745
——potash, alumina, silica from feldspar. Hart 634

ALUMINIUM:
——Advances in metallurgy..... 650
——Alloys. Light. (S.)..... 756
——Alloys deterioration 749
——Alloys with zinc..... 424
——Alloy with titanium. Rossi. (P.).. 308
——Electric equipment of Whitney, N. C., plant. 763
——for water purification..... 351
——in France 655
——International aluminium syndicate.. 425
——Oxy-acetylene welding. Carnevali... 726
——Pickling before plating. Jahn. (P.). 552
——Plant in Whitney, N. C..... 445
——Serpek process 255
——Solder. Erkens. (P.)..... 556
——Solder. Hartmann. (P.)..... 309
Alundum refractory. Boeck..... 581
——Fitz Gerald 129
Alundum extraction thimble for copper determination. Bahney 737
Alunite. Source of potash. Waggaman. 734
Amalgamated Copper Co..... 11

AMALGAMATION:
——Electrolytic. Alling. (P.)..... 51
—— Andreoli. (D.)..... 765
—— Danckwardt. (D.)..... 122
—— Edwards. (D.)..... 62
—— McNulty. (D.)..... 765
—— Pelatan and Clerici. (D.)..... 122
—— Potter. (P.)..... 752
——Amalgamator for gold. Frey. (P.). 552
——(See also Gold and Silver.)
Amalgams. Thallium. Richards and Daniels 619
Amalgams. Vapor pressure and e.m.f.... 619
American Carbon & Battery Co..... 121
American Chemical Society. Washington meeting 66
American Cyanamide Co..... 667
American Electrochemical Society, 66, 126, 194, 390, 710, 745
——Assisted research fund..... 406
——Boston meeting 257, 285
American Foundrymen's Association. Buffalo convention 702
American ingot iron for metallic roofing. Aupperle 57
American Institute of Chemical Engineers, 8, 10, 710, 770
——Proposed code of ethics. Richards.. 776
American Institute of Metals, Buffalo Convention 702
American Institute of Mining Engineers, 66, 710
——Cleveland meeting 801
——Iron and steel division..... 326
——Japan excursion 15
——New York meeting..... 161
——Situation in Stone and Corning.... 512
American Iron and Steel Institute..... 710
——Electric steel refining..... 371
——Pittsburgh meeting 772
American Museum of Safety..... 113
American Rolling Mill Co..... 444
American Vanadium Co.....237, 763
American Zinc, Lead & Smelting Co.... 377
Ammonia. Synthetic. Bernthsen..... 637
Ammonium sulphate from ammonia and sulphur dioxide from coal gases. Feld. 395
Anaconda. Chemistry of reduction processes. Laist 592

ANALYSIS:
——Alundum extraction thimble for copper determination. Bahney..... 737
——Barium 645
——Combined potash bulb and drying tube. Vanier..... 380
——Combustion train for electric furnace. Vanier..... 380
——Compressed oxygen for estimating carbon in ferroalloys..... 750
——Cupellation of silver-lead buttons. Benner and Hartmann. (S.)..... 246
——Determination of methane in producer gas. Arndt..... 391
——Electro-analysis with acidified chloride electrolytes. Schock and Brown 684
——Electrolytic assay of gold solutions. Crighton. (S.)..... 120
——Electrolytic determination of lead.... 108
——Electrolytic, of lead. List..... 135
——Errors in gas analysis. Burrell and Seibert 690
——Free sulphur in spent oxide..... 174
——Gas analysis. Williams..... 382
——Hydroxide reactions 645
——Light platinum electrodes. Gooch and Burdick. (S.)..... 559
——Manganese 645
——Methods of sampling and analysis. U. S. Steel Corporation.....650, 668
—— Ores containing the platinum group metals. Dart..... 219
——Oxalate-permanganate method for determining copper 377
——Oxygen in iron. Walker and Patrick 629
——Pig iron. U. S. Steel Corporation.. 668
——Precipitation of ammonium sulphide group of metals..... 645
——Quick combination methods of assays. Levings..... 549
——Refined in ore testing..... 449
——Samples. Preparation. Blyth. (T.) 815
——Silver ores containing cobalt, nickel and arsenic. Handy..... 688
——Standard methods of sampling for check analysis. Association of American Steel Manufacturers.. 701
——Sulphur in oils..... 635
——Strontium 645
——Typical analyses of iron blast-furnace gases 713
——Water in petroleum..... 635
——Zinc dust. Sharwood. (S.)..... 376
Analytical chemistry at congress, 604, 615, 623, 635, 645
Annealing of coinage alloys. Rose..... 724
Annealing low-carbon steel. Coarse crystallization. Sherry 666
Antimony by electrolysis from sulphide. Engelhardt and Nettel. (D.)... 502
——Electrolytic process. Engelhardt. (D.) 188
——from stibnite. Fink..... 296
——in tough-pitch copper. Johnson..... 726
Argall, Philip.....61, 187
Arizona Copper Co..... 196
Arsenic. Electrolytic process. Engelhardt. (D.) 188
Arsenic ores. Vacuum furnace treatment. Fink 296
Arsenical silver ore. Treatment. Fink. (P.) 177
Arsenous chloride. Volatility..... 605
Asphalt 614, 635
Asphalt 635
Assay. (See Analysis.)
Association of American Steel Manufacturers. Standard methods of sampling for check analysis..... 701
Atlas Dryer Co..... 798
Atmospheric nitrogen fixation. (See Nitrogen.)
"Atomized" lead and zinc for precipitation of gold and silver. Neil. (P.), 180, 431
"Atomized" lead and zinc. Neil (P.).181, 305
Atomic weights 623

East Engin.
Library

B

BAEKELAND, L. H. Portrait.....584, 596
Bag house for recovery of lead fumes. Eilers. 588
Bag house. Shaking the bags. Meier. (P.) 555
Bakelite for acid-proof linings and other chemical purposes 53
Baker, J. T., Chemical Co..... 108
Balance. Specific gravity..... 605
Balancing chemical equations. Wilson.. 94
Balling scrap iron. Lentz. (P.)..... 247
——Sellers and Nicholls. (P.)..... 487
Balling. (See also Agglomeration, Blast Roasting, Briquetting, Sintering.)
Ball Mills. Shepard..... 216
Bamboo cellulose 609
Bancroft, W. D. Portrait..... 605
Bartley, Jonathan, Crucible Co..... 182
Battelle & Renwick 762
Bausch & Lomb Co..... 445
Beck, Erich A..... 321
Beehive coke ovens..... 645
Belt conveyors. Moss..... 346
Benner, R. C..... 703
Bethlehem Steel Co. Electric steel refining 509
Biddle, James G..... 252
Bigelow, W. D. Portrait..... 604
Bignell, L. G. E..... 384
Biochemistry at congress.....615, 626
Bioelectric potential differences. Bentner. 619
Biological chemistry. Infinitely small quantities. Bertrand 598
Bismuth-silver alloys. Refining. Lacey. 747
"Black Body." Shook..... 238
Black-body standards. Shook..... 416
BLAST FURNACE:
Air-blast heater. Hohmann. (P..)..... 820
——Alumina in slag. Johnson..... 812
——American water-jacket lead blast furnace. Canby..... 596
——Blowing in. Sweetser..... 803
——Charging apparatus. Baker. (P.)... 305
——Charging device. Roberts. (P.)..... 554
——Charging fine ore and dust. Dougherty. (P.) 432
——Construction. Ladd and Baker. (P.). 487
—— McMurray. (P.)..... 488
—— Roberts. (P.) 487
——Design at Granby copper smelter. Lee. 149
——Direct and indirect reduction. Levin. 420
——Drying air by refrigeration for dry blast. Walter and Currier..... 471
—— Smith 657
——Enriching blast with oxygen. Jenkins. (P.) 247
——Purification of gases by Feld centrifugal gas washer..... 436
——Blast furnace and sky-scraper on fire. Analogy 64
BLAST ROASTING:
——Galena. Bannister. (S.)..... 246
——Greenawalt down-draft pan. Pulsifer. 207
——Huntington-Heberlein pots. Pulsifer. 157
——Important factors. Pulsifer....153, 207
——Savelsberg converters. Pulsifer.... 158
——(See also Briquetting, Sintering.)
Bleaching powder. R. L. Taylor..... 256
Bleaching powder for production of oxygen. Neumark 109
Blower, pressure 445
Blowpipe. First injector type..... 70
Blowpipe for oxy-acetylene welding. Reich. 442
Blue powder. Electrolytic reduction. Bleeker 300
——(See also Zinc.)
Bogert, M. T. Portrait..... 593
Boilers. Action of caustic soda..... 46
——Reduction of heat-conducting surface. 438
Bolting cloth 445
BOOK REVIEWS:
——Abegg, Auerbach and Luther. Messungen Elektromotonischer Kräfte galvanischer Ketten. 256
——Annual tables of constants and numerical data, chemical, physical and technological.....572, 766
——Bender, Der Praktische Hochofenbetrieb 504
——Billiter, Die eletrochemischen Verfahren der chemischen Gross Industrie 384
——Billiter, Die elektrolytische Alkalichloridzerlegung mit Starren Metallkathoden 504
——Brearley. Heat treatment of tool steel 190
——Burgess & Le Chatellier. Measurement of high temperatures.... 448
——Byers & Knight. Notes on qualitative analysis 705
——Caldercott, Smart, Thomas, Stokes, Dowling, White, Johnson, McA. Johnson and Schmitt on a textbook of Rand metallurgical practice. 448
——Chauvenet. Chemical arithmetic and calculation of furnace charges.. 572
——Clarkson & Dyson. Chemical works, their design, erection and equipment. 504
——Dietz & Malinie. L'Argent et les Metaux de la Mine de Platine.. 322
BOOK REVIEWS: (Continued.)
——Fischer. Chemischtechnologisches Rechnen 447
——Fleissner. Eisenhochofenschlacken.. 504
——Fleming. Electric Wave Telegraphy. 62
——Fulton. Manual of fire assaying.... 189
——Geilenkirchen. Grundzuge des Eisenhüttenwesens 190
——Greenawalt. Hydrometallurgy of copper 826
——Hall & Harbord. Metallurgy of steel. 448
——Handbook for ironfounders..... 706
——Hatfield. Cast iron in the light of recent research 766
——Heyn & Martens. Handbuch der Materialenkunde für den Maschinebau 705
——Hill. Laboratory Guide..... 826
——Hinrichsen & Memmler. Der Kautschuk und Seine Prufung..... 322
——Hull. Industrial depressions..... 706
——Jellinek. Hydrosulfit..... 826
——Journal of the Municipal School of Technology, Manchester 189
——Kaye and Laby on tables of physical and chemical constants and some mathematical functions..... 122
——Knight & Byers. A text book of inorganic chemistry 705
——Kremann. Anwendung physikalischchemischer Theorien auf technische Processe und Fabrikationsmethoden 447
——Lang. Metallurgy 256
——Le Chatelier. Introduction a L'Etude de la Metallurgie..... 766
——Lunge. Sulphuric acid and alkali.... 256
——McFarren. Mining law for the prospector, miner and engineer..... 122
——Malinie & Dietz. L'Argent et les Metaux de la Mine de Platine. 322
——Martens & Heyn Handbuch der Materialenkunde für den Maschinebau 705
——McCullough. Engineering as a vocation 190
——Meade on Portland cement..... 448
——Meade and Price. Analysis of Brass. 826
——Neumann. Lehrbuch der Chemischen Technologie and Metallurgie.... 766
——Osann. Lehrbuch der Eisen und Stahlgiesserei 448
——Parry. Systematic treatment of metalliferous waste. 504
——Partington. Higher mathematics for chemical students. 572
——Pitaval, Elektrochemische Industrie Frankreichs 826
——Pring. Laboratory exercises in physical chemistry 384
——Prost. Cours de Metallurgie des Metaux antres que le Fer..... 705
——Revelsberger. Elektrometallurgie.... 705
——Ricketts. A manual of American mining laws 122
——Robin. Traite de Metallographie.... 706
——Sadtler. Industrial organic chemistry 448
——Sauveur. The metallography of iron and steel 766
——Schmitt. Rand metallurgical practice 826
——Senter. A text book of inorganic chemistry 705
——Schloffer. Galvanostegie 256
——Smith. Electro-analysis 122
——Stoughton. Metallurgy of iron and steel 190
——Technology and industrial efficiency. 189
——Verein Deutscher Eisenhuttenleute. Gemeintfossliche Darstellung des Eisenhuttenwesens 504
Borax Lake. Potash in..... 261
BORON:
——for improving copper castings. Weintraub. (P.) 556
——for making copper and zinc alloys. Rockey and Eldridge..... 697
——Reduction and purification. Weintraub. (P.) 309
——Weintraub 620
Bosworth, Harold O..... 384.
Braden Copper Co..... 724
Bradley process for low-grade copper ores. (S.) 178
BRASS:
——Electrolytic deposition. Thompson. 458
——Melting in electric furnace. Clamer and Hering 702
——Hansen 703
——Oxygen in. Turner..... 726
——Tin and lead in..... 226
Brass. (See also Alloys.)
Brick for metallurgical furnaces. McNight and Youneman. (P.).... 309
Brick. (See also Fire Brick.)
BRIQUETTING:
——copper shavings. Glass. (P.)..... 51
——flue dust. Hubner. (P.)..... 696
—— Vogel 164
——Fuel 463
——Groendal process. Hansell..... 166
——Improved channel furnace of Groendal type. Hamilton. (P.).... 752
——iron borings. Valentine. (P.)..... 751
——Schumacher process. Richards..... 165
—— Vogel 164
BRIQUETTING: (Continued.)
——(See also Agglomeration, Balling, Blast Roasting, Sintering.)
British Association 655, 749
British Columbia. Metallurgy. Jacobs.. 112
British Columbia Copper Co..... 113
Bromatology at Congress.....615, 625, 636
Bronze. (See Alloys.)
Brown Instrument Co.....186, 445, 763
Brown, A. H..... 255
Brownlee, A. G..... 188
Buckets. Elevator. Maguire. (S.)..... 695
Burch, H. Kenyon.....255, 569
Bureau of Mines...65, 258, 503, 544, 678, 724
Bureau of Standards.....342, 390
——Analyzed samples.....260, 763
——Metallography and metallurgy. Burgess 467
Butte & Superior..... 771
Butters, Charles 569
Byproduct Coke Ovens. (See Coke.)

C

CADMIUM coulometer 620
Cactani, Gelasio 121, 187
Calculations. Uniformity and simplicity in electrochemical. Hering..... 285
California Miners' Association..... 563
California. Smelting and agriculture... 261
Callbreath, James F..... 703
Calorimeters 160
Carbon dioxide automatic analyzers..... 121
Calumet & Hecla Co..... 377
Cameron, F. K. Portrait..... 601
Camp Bird 262, 281
Carbon crystallization. Artificial. Howell. 197
Carbon dioxide detection..... 605
Carbon dioxide meters.....121, 382, 497
Carbon monoxide and dioxide nomenclature. Lawrence 14
CARBIDE OF SILICON:
——Dense. Tone. (P.)..... 550
——Temperature of formation. Saunders. 287
——Bancroft, Walker and Miller..... 685
——Norton Co. plant..... 519
——Refractories. Fitzgerald 129
Carbides and nitrogen. Tucker and Yanz 584
Carbon-silicon refractory. Acheson. (P.) 550
Carbon determination in iron and steel. Robinson 295
Carborundum. (See Silicon Carbide.)
Carlyle, E. J..... 446
Carnotite ores. Concentration. Fischer. 356
Carnotite. Vanadium from. Fischer.... 469
Carpenter, Arthur H..... 504
Carter, T. Lane..... 704
Case hardening. Abbott and Ammon.... 802
Case hardening of special steels. Sauveur and Reinhardt 813
Castings. Steel. Crucible vs. Tropenas converter vs. electric furnace.. 54
Cathode. Rotating. Bennett..... 298
Catlin, Seth Clinton..... 446
Caustic alkalis, alumina, hydrochloric acid and cement from salt, clay and lime. Cowles..... 659
Caustic soda. Action on boiler plates.... 46
Caustic. Electrolytic. (See Sodium Chloride Electrolysis.)
Caven, T. M..... 764
Cell. Dry. Construction and manufacture. Richardson 531
Cells. Dry. Report of Am. Electrochemical Society Committee 361
——Short-circuit current and deterioration. Hambuechen 364
——Melsom. Nat. Phys. Lab..... 365
Cellulose 616, 624 636
Cellulose. Bamboo 609
CEMENT:
——alumina, hydrochloric acid, and caustic alkalis from salt, clay and lime. Cowles 659
——grinding. Sturtevant 380
——Portland. Control of dust. Schmidt. 611
——Portland. Magnesia in..... 612
——Portland. Properties. Reibling and Reyes 612
——Portland. Setting. Cushman..... 611
——Portland. Testing for free lime.... 613
——Setting. Recorder. McKenna..... 82
——Statistics for 1911..... 127
Centrifugal action producing e.m.f. Miller. 297
Centrifugal gaswasher. Feld..... 436
Centrifugal separation of ore slime. Peck. 235
Charcoal iron. Effect of high carbon. Johnson 777
Charges of furnaces. Calculation. Chauvenet 36, 104, 135, 220, 338
Chemical equations. Balancing. Wilson. 94
Chemical Formulae. Bailar..... 262
Chemical industries. American..... 199
Chemical industry of Germany. Achievements and problems. Duisberg. 620
Chemical Process Co..... 182
Chemical processes. Commercial development. Whiting 627
Chemicals, oils and paints. Glossary.. 199
Chemist-analyst 108
Chemists' Club 10, 637
Chilian Mills. Slow-speed. Empson. (S.) 244
Chino Copper Co.....196, 654
Chlorate plant in France..... 716

Chlorides reduced by sodium. Hunter... 623
Chlorine. Electrolytic. (See Sodium Chloride Electrolysis.)
Chlorine-proof ebonite. Wilderman..... 629
Christy, S. B..... 503
Chromium-cobalt alloys. Haynes..... 804
Clam shell filter..... 493
Clark, Kilburn D..... 764
Classification. Hydraulic. Robertson... 793
Classification of ore pulps for concentrating tables. Shepard..... 218
Classifier. Richards. Pulsator..... 61
Classifier. Shaking. Inclined-screen hydraulic. Skinner..... 343
Classifier and agitator. Fairfield. (P.).. 177
Clay for production of alumina, hydrochloric acid, caustic alkalis and hydraulic cement. Cowles..... 659
Claudet, H. H..... 61
Cleaning gas. Johnson. (P.)..... 555
Clevenger, G. H..... 569
COAL:
——Artificial production. Bergius..... 648
——Coking at low temperatures. Parr and Olin. (S.)..... 755
——Dust as open-hearth fuel. Barbanson and Lepersonne. (P.)..... 485
——Gas. Extraction of ammonium sulphate. Feld..... 395
——Gas. Purification with recovery of byproducts. Burkheiser..... 691
——Low-grade lignite coals. Babcock... 691
——preparation. Ayres..... 691
——Spontaneous combustion..... 645
——Strike in England.....241, 302
——Sub-bituminous. Constitution and genesis. Thiessen..... 691
——Tar colors at Congress.....614, 624
Cobalt-chromium alloys. Haynes..... 804
Cobalt-nickel-silver-arsenic ores. Vacuum furnace treatment. Fink..... 296
Cohesion. Intercrystalline in metals. Rosenhain and Ewen..... 725
Cohesive forces. Electrical energy from. Hering..... 14
Coke. Neutral. Campbell..... 690
Coke ovens. Beehive..... 645
Coke ovens. Byproduct. Papers by Blauvelt, Andrews, Lucas..... 806
Coke ovens. Byproduct in U. S. Hartman..... 521
Coke-oven gas for open-hearth furnaces. (S.)..... 47
Coking coal at low temperature. Parr and Olin. (S.)..... 755
Coke. Removal of sulphur. Spurrier. (P.)..... 50
Colby, Albert Ladd..... 61
Cole, A. W..... 703
College of the City of New York..... 67
Collins, George E.....61, 121, 187
Colloids. Zsigmondy..... 629
Colorado Grubstake & Mining Co..... 61
Colorado Iron Works Co..... 564
Colorado. Metallurgical activity....261, 427
Colorado School of Mines.....127, 397
——Experimental ore dressing and metallurgical plant. Anderson..... 269
Colorado Scientific Society..... 223
Colorimeter. Campbell-Hurley..... 499
Columbia University. First class in chemistry, 1860..... 517
Combustion. Surface or flameless. Lucke and Bone..... 409
Combustion train for electric furnace. Vanier..... 380
Compressed air for pumping. Abrams.. 316
——for agitation. Trent..... 429
Compressive strength of alloys. Measurement. Huber..... 96
Comstock, George F..... 703
CONCENTRATION:
——Carnotite ores. Fischer..... 356
——Centrifugal separation of ore slime. Peck..... 235
——Electrostatic. Wentworth..... 167
——Electrostatic of zinc-copper middlings. Houser. (S.)..... 49
——flotation..... 191
——Flotation of dry ore pulp. Parmelee. 132
——Iron ores. Hansell..... 811
——Iron ores in Minnesota..... 717
——Jigging unsized ores. Wright..... 759
——Jigs. Shepard..... 217
——Magnetic of pyritic blend concentrates. Hugon. (S.)..... 430
——Magnetic of zinc iron ores in southwestern Wisconsin. Ruhoff..... 278
——Molybdenite..... 110
——Progress in mill design. Shepard... 215
——Shaking inclined-screen hydraulic classifier. Skinner..... 343
——Zinc ore dressings in Colorado. Parmelee..... 527
Concentrators. Multiple-deck slime. Wilfley..... 676
Condensation problem in electric zinc smelting..... 451
Condensers for vacuum plants. Viola.366, 407
Conduction. Electric in gases. Symposium..... 292
Congress. International of applied chemistry.....390, 449, 455, 573, 649
——An American Welcome. (Backeland, Doremus, Maynard..... 513
——Congress eve..... 505
——Report.....578, 683, 727, 745
Congress. Influence of Paris congresses of applied chemistry. Doremus. 514
Congress. Reminiscences of Berlin and London congresses of applied Chemistry. Baekeland..... 513
Congress of International Association for Testing Materials.....569, 577
Connersville Blower Co..... 255
Conservation at congress.....574, 626
Conservation. Two aspects of..... 574
Conservation. Two aspects. Bell..... 714
Contact process of sulphuric acid..... 630
——combined with lead chamber..... 633
CONVERTER:
——construction. Zenges. (P.)..... 752
——construction. Blackward. (P.)..... 820
——Copper at Granby smelter. Lee..... 151
——Fumkin. (P.)..... 486
Conveyors. Belt. Moss..... 346
Conveyors. Belt and bucket. Automatic continuous recorder of weight.. 562
Conveyors. Screw. End flights. For abrasive materials. Link-Belt Co..... 823
COPPER:
——Alloys with zinc. Bancroft and Lohr. 690
—— Jones. (P.)..... 816
—— Microstructure. Carpenter 725
——Alumina in copper slag. Buchanan and Lee..... 795
—— Bellinger..... 693
——Alundum extraction thimble for determination of copper. Bahnen. 737
——Annealed copper standard..... 390
——Bisulphite process. Hommel and Durant. (S.)..... 179
——Blue gelatine copper. Bancroft and Briggs..... 634
——Boron for copper castings. Weintraub. (P.)..... 556
——Boron for making alloys. Rockey and Eldridge. (P.)..... 697
——Bradley process for low-grade copper ores. (S.)..... 178
——Briquetting copper shavings. Glass. (P.)..... 51
——California zinc-copper ores treatment. 564
——Carbon in electrolytic copper..... 685
——Chemistry of reduction processes at Anaconda. Laist..... 592
——Chromic acid solvent. Hess. (P.).. 179
——Combination electric and fuel smelting. Ladd. (P.)..... 754
——Computation of copper matte and slag case. Chauvenet..... 340
——Concentration of ore slime by centrifugal separation. Peck..... 235
——Cost of smelting. Graves..... 112
——Cyanamide process. Clancy. (P.).. 117
——Determination by oxalate-permanganate method..... 377
——Development of reverberatory furnace. Mathewson..... 591
——Disadvantages of American copper specifications. Lewis..... 540
——Electrolytic chlorination process. Douglas..... 447
——Electrolytic in Norway..... 756
——Electrolytic production from ores. Burghardt and Rigg. (D.)..... 570
——Electrolytic process. MacKay. (S.). 179
——Electrolytic process for copper-silver ores. Hoepfner. (D.)..... 62
——Electrolytic process for zinc, copper, iron ores. Ashcroft. (D.)..... 704
——Electrolytic refining in Australia... 694
——Electrolytic refining. Emrich..... 171
——Electrolytic treatment of ore. Burton. (D.)..... 765
——Electrolytic treatment of ores. Smith and Lyng. (D.)..... 763
——Electrolytic treatment of sulphide ores. Hoepfner. (D.)..... 446
——Electrostatic separation of zinc-copper middlings. Houser. (S.).. 49
——Flotation of ore. Ashcroft. (S.).. 815
——Granby Smelter. Lee..... 147
——Greene Cananea Copper Co..... 453
——Impurities in tough-pitch copper. Johnson..... 726
——Influence of oxygen on arsenical copper. Greaves..... 225
——Inorganic addition agents for electrolytic deposition. Spear..... 685
——Inversion in copper-zinc alloys. Carpenter..... 224
——Mason Valley smelter..... 261
——Melting cathode copper. Rockey and Eldridge. (P.)..... 306
——Melting in electric furnace. Clamer and Hering..... 702
—— Hansen..... 703
——Metallurgy in 1911..... 2
——Milling practice at Lake Superior.... 795
——Nikko Copper Works..... 19
——Oxy-acetylene welding. Carnevali.. 726
——Pentlandite in Sudbury ores. Apgar and Thomas..... 744
——Porphyry copper producers..... 324
——Production..... 398
——Recovery of dust from smelter fumes by Feld centrifugal gas washer.. 437
——Recovery from plating wash water. Edison. (P.)..... 314
——Refining scrap copper alloy. Rockey and Eldridge. (P.)..... 306
COPPER: (Continued.)
——Refining. Rockey and Eldridge. (P.). 433
——Roasting copper pyrites. Gabrielli. (P.)..... 306
—— Wedge. (P.)..... 816
——Rock-house practice in copper country.....678, 680
——Series of slags. Fulton..... 813
——Simultaneous electrolytic deposition of copper and zinc. Thompson. 458
——Smelting furnace. Partridge. (P.). 433
——Smelting and refining at Great Cobar, Australia. (S.)..... 120
——Solubility in nitric acid of gold contained in copper bullion. Keller. (S.)..... 557
——Sulphatizing roasting. Wedge..... 593
——Tensile strength of electrolytic. Bennett..... 298
——Copper tests at higher temperatures. Huntington..... 724
——Treatment of copper ores. Wet. Gahl. (P.)..... 306
——Treatment of mine water. (S.)..... 558
——Wet process. Gadowsky. (P.)..... 179
—— Alzugaray. (P.)..... 816
Corbin, William Horace..... 764
Corbin, J. Ross..... 446
CORROSION:
——Anticorrosive alloy. Jacquier. (P.) 308
——Condenser tubes. Philip..... 224
——Corrosion prevented by electrolytic method. Clement and Walker. 646
——Influence of various elements on corrosion of iron. Burgess and Aston..... 647
——Iron and steel.. Stromeyer..... 790
——Iron by sulphuric acid. Watts..... 300
——Metals. Dunstan and Hill..... 45
——Metals in contact. Hanson and Lewis..... 646
——Mill scale as cause..... 646
——Monel metal and other alloys..... 667
——Rate of rusting. Aston and Burgess..... 647
——Research in England..... 174
——Symposium..... 646
Cotton goods. Permanent fireproofing. Perkin..... 636
Cottrell, Frederick G.....321, 504
Coulometer Hulett. Silver and Cadmium 620
Coulometer. Iodine..... 620
Cox, W. Ray..... 446
Cripple Creek.....127, 681
Crucible furnace. Buess. (P.)..... 821
Crucible Steel Co. of America..... 765
Crucibles. Use and care in foundry practice..... 182
CRUSHING:
——Assailing the stamp mill..... 768
——Coarse. Shepard..... 215
——Fine. Shepard..... 216
——Rolls. Frazee. Payne..... 170
——Rolls. Heavy-duty. Automatic lateral adjustment. Traylor..... 378
——(See also Chilean Mills, Grinding, Rolls, Stamps.)
Crystallization of carbon. Artificial. Howell..... 197
Crystallization. Coarse due to annealing low-carbon steel. Sherry..... 666
Crystals in metals. Cohesion. Rosenhain and Ewen..... 725
Crystolon. Norton Co.'s plant. FitzGerald..... 519
Crystolon Refractories. FitzGerald..... 129
——(See also Carbide of silicon.)
Cushman, A. S. Portrait..... 592
Culture in Education of Engineers. Saunders..... 427
Cuyuna Iron Ore Range..... 802
Cyanamide..... 667
Cyanamide. Frank. (P.)..... 550
Cyanamide from chloride. Acker. (P.) 551
Cyanide. Sodium cyanide from chloride. Acker. (P.).....312, 551
CYANIDE PROCESS:
——Aeration. Cohen and Gross. (P.), 203. 374
——Agitator and classifier. Fairfield. (P.)..... 177
——Agitation principles. Trent..... 429
——Australia. Macleod..... 49
——Available calcium oxide in lime. (S.) 48
——Base ores and concentrates..... 11
——Chispas plant, Arizpe, Mexico. (S.) 119
——Concentrate. Linton. (S.)..... 694
——Continuous decantation accessory to vacuum filtration. Mennel. (S.) 176
——Continuous decantation in Clear County, Colo. Parmelee..... 27
——Counter-current continuous agitation 564
——Cripple Creek..... 127
——Cyanamide process..... 117
——Cyanide cylinder. Meade. (P.)..... 696
——Double-chamber furnace for melting cyanide precipitates..... 445
——Effect of lead acetate. Cohen..... 203
——Effect of picric acid. Cohen..... 203
——Effect of protective alkali. Cohen... 203
——Effect of roasting. Cohen..... 203
——Electrolytic amalgamation....51, 62, 122, 552, 570, 571, 765
——Electrolytic amalgamation. Frey. (P.)..... 552
—— Potter. (P.)..... 752
——Electrolytic cyanide process. Alling. (S.)..... 51

CYANIDE PROCESS: (Continued.)
—— Andreoli. (D.)....502, 503, 704, 765
—— Craney (D.)..... 825
—— Crawford. (D.)..... 189
—— Danckwardt. (D.).....122, 447
—— Edwards. (D.) 62
—— Eltonhead. (D.) 322
—— Hebaus. (D.) 705
—— Keck. (D.)..... 447
—— Keith. (D.)..... 704
—— McNulty. (D.)..... 765
—— Netto. (D.)..... 503
—— Parks. (S.)..... 491
—— Pelatan. (D.)..... 823
—— Pelatan and Clerici. (P.)..122, 446, 447, 502
—— Porter. (D.)..... 765
—— Riecken. (D.)..... 825
—— Webb. (D.)..... 570
—— Whitridge. (D.)..... 704
——Electrolytic precipitation of gold from cyanide 489
——Filter press indicator. Kelly. (P.).. 374
——(See also Filter and Vacuum filter.)
——Imlay apparatus. (P.)..... 177
——Magnetic removal of iron from mill pulp. Johnston. (S.)..... 815
——Nicaraguan gold ore. Kaeding..... 120
——Nipissing silver ores. (S.)..... 558
——Nissen stamps. Tests. (S.)..... 176
——Parral tank for slime agitation. (S.). 434, 481
——Precipitation. Fraser. (D.)..... 189
——Precipitation. Kendall. (D.)..... 189
——by atomized zinc and lead. Neil.
——Pulp agitator. Hammond. (P.)..... 489
——Pulp control by specific gravity flask. Stadler. (S.)..... 243
——Regeneration of cyanide solutions. Williamson. (S.)..... 492
——Retreating rand tailings..... 558
——Slimes density table. Lowden..... 369
——Slime filter. Kelly. (P.)..... 697
——Slime filtration. Young. (S.)..... 48
——(See also Filter.)
——Slime thickener and decanter. Lamb. (P.) 50
——Slime Treatment in Victoria. (S.).. 430
——Tailing. Banks. (S.)..... 693
——Talisman Mine, New Zealand. (S.). 242
——Zinc dust testing. Sharwood. (S.).. 375

D

DAVIS, Walter W..... 569
Day, D. T. 597
de Beers, F. M..... 61
Decantation. (See Cyanide.)
Decomposition temperatures of sulphates. Hofman and Waujukow....172, 596
Deflocculation. Acheson 46, 52
Density of slimes. Table. Lowden..... 369
de Saulles, C. A. H..... 764
Denver Fire Clay Co..... 765
Detinning in Italy..... 202
Detinning. Weber (P) 307
Development, commercial, of chemical processes. Whiting 627
Dewatering devices. Shepard..... 219
Dickey, D. D. 446
Diamonds. Artificial. Howell..... 197
Didier-March Co. 252
Dielectric resistance with alternating currents 302
Digest of Electrochemical U. S. Patents prior to 1903.....62, 122, 188, 322, 446, 502, 570, 704, 765, 825
Dionic water tester..... 251
DISCHARGES, ELECTRIC:
——Dust precipitation. Cottrell, 172, 313, 611, 629, 686, 754
——Whitney 313
——Nitric acid from air. (See Nitrogen Fixation.)
——Ozone. (See Ozone.)
Distillation apparatus. Fractional. Robert 60
Distillation, fractional, of wood tar by electric heat. Benson..... 544
Distillation. (See also Still.)
Dixon Crucible Co..... 373
Dixon, Joseph 405
Doherty patents upheld..... 369
Douglas, James 61
Douglas, Walter 704
Draper, F. W. 255
Drobegg, G..... 824
Dry cell. Construction and manufacture. Richardson 531
Dry cells. Hambuechen and Ruhoff..... 685
Dry Cells. Report of Am. Electrochemical Society Committee 361
——Short-circuit current and deterioration. Hambuechen 364
——Melsom. Nat. Phys. Lab..... 365
Dryer. Atlas 798
Drying air for blast furnaces..... 510
Drying air for blast furnaces. Walter and Carrier 471
——Smith 657
Drying by Alumina. Johnson (S.)..... 755
Drying iron ore on the Mesaba Range... 798
Drying ore. Abrasion and dust losses. Dietz and Keedy. (S.)..... 558
Drying. Problems in vacuum drying. Devine 699
Ducktown Sulphur, Copper & Iron Co. Manufacture of sulphuric acid.. 405
Duisberg, C. 569, 586
Du Pont Powder Co. Organization of research. Comey 141
Duralumin 756
Dust losses in ore drying. Dietz and Keedy. (S.) 558
Dwight-Lloyd system. (See Sintering.)
Dyes. Testing 614
Dyestuffs at Congress.....614, 624

E

EAGLE Mine & Milling Co..... 528
Ebonite. Alkali and chlorine-proof. Wilderman 629
Economizer. Green 438
Education. Engineering. Ultimate object 386
Education of Engineers. Culture in. Saunders 427
Eighth International Congress of Applied Chemistry. (See Congress.)
Electric Furnace Co..... 764
Electric high-tension equipment of electrochemical plants. Wilson..... 290
Electrical energy from cohesive forces. Hering 14
Electrical units. International..... 283
Electrochemical plants. High-tension equipment. Wilson 290
Electrochemistry and chemistry in 1911.. 9
Electrode. Carbon with graphite tips. Hansen. (P.) 311
ELECTRODES:
——Connection of carbon electrodes. Redlich. (P.) 311
——for furnaces. Turnbull..... 289
——Iron coke. Lidoff..... 593
——Mineral Wells..... 620
——Water-jackets for. Ruthenburg. (P.) 311
Electro-Flex Steel Co..... 61
Electromechanical forces in bath of induction furnace. Unger..... 263
Electromotive force produced by centrifugal action. Miller..... 297
Electroplating. (See Plating.)
Electrotyping plant. Street & Smith.... 442
Electrostatic concentration. Wentworth. 167
Electrostatic separation of zinc-copper middlings. Houser. (S.)..... 49
Elements. Chemical. Melting points.... 530
Elevator buckets. Maguire. (S.)..... 695
Elliott, A. H. 384
Emerson Co. 26
Emmons, N. H. 446
Employees' Welfare 710
Endosmose, Electric. Bancroft..... 298
Engineers. Culture in education. Saunders 427
Equations. Chemical. Balancing. Wilson 94
Ethics. Proposed Code of. Richards.... 776
EVAPORATORS:
——Condensers. Viola 366, 407
——Evaporative capacity of lead-lined copper coils. Viola 267
——Evaporator tubes. Comparative heat transmission of copper, steel, lead and tin. McCormack. (S.).... 755
——Faller evaporator test..... 565
——Jackets. Viola 102
——Vacuum calculations. Viola..... 31
Exothermic Steel. Amsler..... 559
——Richards, Harden, Amsler..... 774
——Richards, Gelstharp, Amsler..... 712
Explosives at congress..605, 615, 624, 635, 755

F

FARADAY Society 52, 402
Fats and oils..... 607
Feld, Walter, Gasabteilung..... 437
Feldspar for production of potash. Hart 634
Fermentation at congress... 616, 617-625, 636
Ferro-alloys. Compressed oxygen for estimating carbon in..... 750
Ferrosilicon explosions 303
Ferrotitanium. Rossi. (P.)..... 308
Ferrotungsten 255
Ferrotungsten. Estimation of manganese in 303
Fertilizers. Bicalcic phosphate..... 581
Fertilizers. Catalytic. Bertrand 598
Fertilizer chemistry. Recent advances.. 708
Fertilizer convention 501
FILTER:
——Clam shell. Sweetland 493
——Cleansing by lactic acid..... 249
——Continuous vacuum. Kier. (P.)..... 431
——Continuous vacuum. Rothwell. (P.) 488
——feed. Traylor. (P.)..... 753
——Leaf vacuum. Singer. (P.)..... 696
——Press. Sweetland 114
——Press indicator. Kelly. (P.)..... 374
——Slime. Kelly. (P.)..... 697
——Vacuum. Barnes. (P.)..... 753
——Vacuum. Holland. (P.)..... 753
——Vacuum. Traylor. (P.)..... 489
FILTRATION:
——Furnace gases. Miller. (P.)..... 374
——Recent improvements. Sweetland... 114
FILTRATION: (Continued.)
——Slime. Young. (S.)..... 48
——Vacuum. Modifications 708
Finlay, J. R. 384
Firebrick lining for furnaces. Strale. (P.) 305
Firebrick. Resistance to temperature changes. Windszus 662
Fire bricks. Melting points. Kanolt, 533, 692
Fire-clay products. Coloration..... 789
Fireproofing. Permanent, of cotton goods. 636
First National Copper Co..... 503
Fisher, W. W..... 504
Fitz Gerald and Bennie Laboratories, 129, 143, 519
——Description of equipment..... 535
Flameless combustion. Lucke and Bone. 409
Flare of furnace walls. Hering..... 159
Floating of solids on liquids. Pape..... 392
Florence-Goldfield mill 61
Florence-Goldfield Mining Co. 195
Flotation 191
Flotation at Butte and Superior..... 426
Flotation of copper ore. Ashcroft (S.).. 815
Flotation of dry ore pulp. Parmelee.... 132
Flotation of Minerals. Mickle..... 430
Flue dust. Sintering and briquetting. Vogel 164
Flynt, A. F. 703
Faller, Oscar 446
Forbes, D. L. H..... 61
Formulæ. Chemical. Bailor..... 262
Form-value and the metallurgical industry 125
Foundry. Electric furnace. Girod..... 663
Frash, Herman. Perkins medal.....14, 73
Freibergers in America..... 652
Frick, Otto 764
Fuels 624, 635
Fuller's earth. Preparation. Ruprecht, (P.) 557
FUMES, SMELTERS:
——Centrifugal gas washer. Feld..... 436
——Dilution. Wislicenus smokestack... 96
——Electrostatic purification. Cottrell system 172, 313, 754
—— Bradley 629, 686
—— Schmidt 611
——Electrostatic purification. Whitney. (P.) 313
——Filtering. Müller. (P.)..... 374
——Magnetic removal of dust from roaster gases. Wedge..... 248
——Thiogen system of control..... 710
Furnace charges. Calculation. Chauvenet 36, 104-135-220, 338
FURNACE, ELECTRIC:
——GENERAL:
—— Automatic temperature control. Thwing 586
—— Carbon electrode with graphite tip. Hansen. (P.)..... 311
—— Classification 385
—— Electrodes. Turnbull 289
—— Heat losses. Fitz Gerald... 286, 599
—— (See also Heat.)
—— Power supply. Sykes..... 290
—— Temperature of silicon carbide furnace 287
—— Thermal insulation of walls. Hering 97
——VARIOUS DESIGNS:
—— Fractional distillation of wood tar. Benson 544
—— Induction furnace. Position. Robertson 128
—— Induction furnace design for steel. Hiorth and Fitz Gerald 71
—— Induction furnace. Electromechanical forces. Unger..... 263
—— Induction furnace. Fleming. (P.) 311
—— Induction furnace. vom Bauer. 14
—— Induction and resistances furnaces. vom Bauer 601
—— For heating bars and billets. Baily 291
—— laboratory furnace for high temperatures. Calhane and Bard 461
—— Large furnace construction. Helfenstein and Taussig.... 686
—— Muffle for heat-treatment of tool steels 445
—— Nitrogen fixation from air. Flame-disk furnace. Rothe. (P.) 312
—— Pinch-effect furnace. Hering.. 196
—— shaft furnace. Greene. (P.)... 310
—— shaft furnace. Lorentzen..... 71
—— Still. Allen 606, 682
—— Transformer crucible furnace.. 501
—— Vacuum furnace metallurgy. Fink 296
—— Vacuum furnace for determining oxygen in iron. Walker and Patrick 629
—— Vacuum furnace for melting aluminium, magnesium, nickel. Simpson. (P.) 551
—— Wile furnace for melting dross and concentrates, etc..... 495
——MANUFACTURE OF:
—— Antimony. Fink 296
—— Arsenic. Fink 296
—— Brass and copper melting. Hansen 703

FURNACE, ELECTRIC: (Continued.)
——MANUFACTURE OF: (Continued.)
—— Brass melting. Clamer and Hering 702
—— Cobalt-silver ores. Fink 296
—— Copper. Combination electric and fuel smelting. Ladd. (P.) 754
—— CYANIDE. Acker. (P.).....312, 551
—— Ferrosilicon 686
—— Gold precipitate melting. Conklin. (S.) 491
—— Pig iron from titaniferous iron ores. Borchers. (S.)..... 175
—— Pig iron. Fleming. (P.)..... 310
—— Pig iron. Lyon..... 587
—— Pig iron. Gas circulation. Richards 289
—— Pig iron at Trollhättan Leffler and Nyström 71, 413
—— Pig iron. Microstructure. Lyon and Langenberg 457
—— Pig iron for open hearth. Lyon 539
—— Pig iron. Projected plant in Valle d'Aosta 744
—— "Pig Steel." Richards..... 397
—— Silicon carbide.... 124, 287, 519, 685
—— Silicon-carbon refractory. Acheson. (P.) 550
—— Silver and arsenic from cobalt ores. Fink. (P.)..... 177
—— Steel. Function of slag. Amberg 601
—— Greene and Amberg..... 656
—— Steel. Combined open hearth and electric furnace. Walker and Gray. (P.)..... 310
—— Steel. Combination with converter and open-hearth. Lamb. (P.)..... 819
—— Steel. Converter-electric. Johnson 751
—— Steel for rails. Wellman..... 372
—— Steel. Frick furnace..... 656
—— Steel. Girod furnace..... 663
—— Steel. Girod. Ejection of gases. (P.) 818
—— Steel. Heroult furnace..... 600
—— Steel. Nathusius furnace..... 227
—— Steel. Richards. Holding Finished Steel in Electric Furnace. (P.)..... 818
—— Steel. Stassano furnace..... 66
—— Steel. Walker process. (P.).. 553
—— Steel. Bethlehem Steel Co..... 509
—— Steel in England..... 241
—— Steel. Electric furnace in foundry practice. Girod.... 663
—— Steel. Experience at South Chicago. Robinson 373
—— Steel for foundry practice and use of titanium. Petinot... 713
—— Steel for small steel castings.... 54
—— Steel. Heating and removal of phosphorus. Greene 600
—— Steel scrap. Greene. (P.)..... 304
—— Steel. Stobie Steel Co..... 763
—— Steel. U. S. Steel Corporation, 323, 371
—— Tin dross, cyanide concentrates etc., Melting. Wile..... 495
—— Zinc. Ingalls 481
—— Zinc. Johnson..... 281, 537
—— Zinc. Louvrier 747
Furnace Gas Consumer Co..... 445
FURNACE, METALLURGICAL:
——Brick. McKnight and Youngman. (P.) 309
——Calculation of furnace charges, Chauvenet.... 36, 104, 135, 220, 338
——Cleaning water-cooled wall furnaces. Rennie. (P.) 555
——Crucible Furnace. Buess..... 821
——Converter. Zenges. (P.) 752
——Development of American water-jacket lead blast-furnace. Canby 596
——Firebrick lining. Strale. (P.)..... 305
——Ore roaster. Meigs. (P.)..... 697
——Parkinson furnace. Dunn..... 498
——Recovery of dust from gases by centrifugal gaswasher. Feld..... 436
—— (See also Fumes.)
——Reverberatory furnace for copper ores. Mathewson 591
——Regenerative reversing. Knox..... 820
——Reversing valve for regenerative furnaces. Gille. (P.)..... 554
——Thermal insulation of walls. Hering 97
—— (See also Heat.)
——Utilization of waste heat of open hearth furnaces in boilers. Pfoser. (S.) 429
——Walls. Flare. Hering..... 159
—— (See also Blast furnace.)

G

GALVANOMETER. Double-reflecting for taking recalescent points. Schramm 251
Garretson, P. E..... 445
Gas analysis. Automatic..... 121
——Burrell and Seibert..... 690
——Uehling 497
——Williams 382
Gas. Blast-furnace. Typical analyses.. 713
Gas cleaning. Johnson. (P.)..... 555
Gas, Coke-oven. For open-hearth furnaces. (S.) 47
Gas. Determination of methane in producer gas. Arndt..... 391
Gases. Blast furnace. Purification by centrifugal gas washer. Feld.. 436
——(See also Fumes.)
Gas. Illuminating. Regulations..... 342
Gas. Natural. Liquefied. Allen and Burrell 234
Gas-post. Water-cooled. Knox. (P.).. 696
Gas producer. Rotary. Chapman..... 821
Gas producer. Doherty patents upheld 369
Gas producer and engine from peat. Hering 283
Gases. Symposium on electric conduction in 292
Gas. Purifying coal gas with recovery of by-products. Burkheiser 691
Gas washer. Centrifugal. Feld..... 436
General Bakelite Co..... 411
Geophysical research. Day..... 90
German-American Stoneware Works..... 438
German chemical industry. Achievements and problems. Duisberg..... 620
German. Teaching of technical German in engineering schools. Scholz 213
Gibbs, Wolcott. Bust at Chemists' Club 10
Giroux Consolidated Mines Co..... 196
Glauconite treatment. Eckel. (P.)..... 554
Glossary on chemicals, oils and paints... 199
GOLD AND SILVER:
——Absorption of gold by amalgamated copper plates. Stanley and Murray. (S.) 314
——Aeration in cyanidation. Cohen and Cross. (P.) 374
——Agitator and classifier. Fairfield. (P.) 177
——Agitation. Principles. Trent..... 429
——Arsenical silver ores. Fink. (P).. 177
——Available calcium oxide in lime for cyanide process. Bahney. (S.) 48
——Chispas cyanide plant, Arizpe, Mexico. (S.) 119
——Chlorination. Long and Skaden. (D.) 189
——Collection of precious metals and Speiss. McMurphy. (S.)..... 815
——Concentrating silver-lead ores at Aspen 653
——Continuous decantation accessory to vacuum filtration. Mennell. (S.) 176
——Continuous decantation in Clear County, Colo. 27
——Counter-current continuous agitation. Colorado Iron Works Co..... 564
——Cupels and Cupellation. Benner and Hartmann. (S.) 246
——Cyanamide process. Clancy. (P.).. 117
——Cyanidation-amalgamation of Nipissing silver ores. (S.)..... 558
——Cyanidation at Cripple Creek..... 127
——Cyanidation of Nicaraguan gold ore. Kaeding. (S.) 120
——Cyanide cylinder. Meade. (P.).... 696
——Cyanide solutions. Regeneration. Williamson. (S.) 492
——Cyaniding in Australia. Macleod. (S.) 49
——Cyaniding base ores and concentrates 11
——Cyaniding concentrate. Linton. (S.) 694
——Cyaniding tailing Banks. (S.)... 693
——Cyaniding at Talisman Mine, New Zealand 242
——Effect of aeration on cyanidation. Cohen 203
——Effect of lead acetate on cyanidation. Cohen 203
——Effect of picric acid on cyanidation. Cohen 203
——Effect of roasting on cyanidation. Cohen 203
——Electric chlorination. Clark. (D.). 322
——Electric melting of gold precipitate. Conklin. (S.) 491
——Electrocyanide process. Andreoli. (D.) 502, 704
—— Craney. (D.) 825
—— Crawford. (D.) 189
—— Danckwardt. (D.) 447
—— Eltonhead. (D.) 322
—— Hebans. (D.) 705
—— Keck. (D.) 447
—— Keith. (D.) 704
—— Netto. (D.) 303
—— Parks. (S.) 491
—— Pelaton and Clerici. (D.) 122, 446, 447, 502
—— Pelaton. (D.) 825
—— Porter. (D.) 765
—— Webb. (D.) 570
—— Whitridge. (D.) 704
——Electrolytic amalgamation. (D.)... 571
—— Alling. (P.) 51
—— Andreoli. (D.) 765
—— Becker. (D.) 571
—— Danckwardt. (D.) 122
—— Edwards. (D.) 62
—— Frey. (P.) 552
—— Haycraft. (D.) 570
—— McNulty. (D.) 765
—— Potter. (P.) 752
—— Richards. (D.) 571
GOLD AND SILVER: (Continued.)
—— Riecken. (D.) 825
——Electrolytic assay of gold solutions. Crighton. (S.) 120
——Electrolytic bromination. Cassel. (D.) 502
——Electrolytic chlorination. Barbour. (D.) 502
——Electrolytic chlorination process. Frolich. (D.) 447
——Electrolytic hyposulphite process. Hirsching. (D.) 62
——Electrolytic precipitation from cyanide. Davis. (P.)..... 489
——Electrolytic process. Hirsching. (D.) 570
——Electrolytic process. Motz. (D.) 570, 571
——Electrolytic treatment of Broken Hill sulphides. Ashcroft. (D.)..... 322
——Filter. Leaf vacuum. Singer. (P.) 696
——Filter press indicator. Kelly. (P.) 374
——(See also Filter.)
——Imlay cyanide apparatus. (P.).... 177
——in bituminous coal..... 301
——Magnetic removal of iron from mill pulp. Johnston. (S.)..... 815
——Metallurgy in 1911..... 4
——Nissen stamps. Test. (S.)..... 176
——Oxidizing leaching solution. Alzugaray. (P.) 305
——Parkes process of desilvering lead bullion. Enrich. 597
——Parral tank for slime agitation. (S.) 48, 434
——Precipitant of atomized lead and zinc. Neil. (P.) 305, 431
——Precipitation. Fraser. (D.)..... 189
——Precipitation from cyanide. Kendall. (D.) 189
——Production in Transvaal, 255, 281, 377, 503
——Protective alkali in cyanidation. Cohen 203
——Pulp agitator. Hammond. (P.)... 489
——Pulp control by specific gravity flask. Stadler. (S.) 243
——Retreating Rand tailings. (S.)..... 558
——Sampling and assaying silver ores containing cobalt, nickel and arsenic. Handy. 688
——Scaling amalgamated plates..... 255
——Silver. Bismuth alloys. Refining. Lacey. 747
——Slime filter. Kelly. (P.)..... 697
——Slime filtration. Young. (S.)..... 48
——(See also Filter.)
——Slimes density table. Lawden..... 369
——Slime thickener and decanter. Lamb. (P.) 50
——Slime treatment in Victoria. Nicol. (S.) 430
——Solubility in nitric acid of gold contained in copper bullion. Keller. (S.) 557
——Treating gold-bearing clay. (P.)... 555
——Zinc-dust precipitating apparatus. (P.) 305
——Zinc dust testing. Sharwood. (S.) 375
Goldfield Consolidated Mines Co., 128, 255, 453, 711
Goldschmidt, Hans 384, 446
Goldschmidt Thermit Co..... 61
Goodner, Ivan E..... 121
Government regulation of industry..... 259
Granby smelter 113, 147
Grate. Rubbing and dumping..... 560
Gravity and c. m. f. Thompson..... 70
Greenawalt down-draft pans. Pulsifer.. 207
Greene Cananea Copper Co..... 453
GRINDING:
——Cement. Sturtevant. 380
——Fine. Slow-speed Chilian mills. Empson. (S.) 244
——rock with balls and cylinders. Davis. 609
——(See also Chilean mills, crushing, rolls, stamps.)
Groendal briquetting process. Hansell.. 166
Guess, George A..... 188
Guiterman Franklin. 446

H

HALDANE, William G..... 188
Hamilton, E. M..... 704
Hardinge, H. W.....446, 569
Hardness of plasters and cements. Recording Set. McKenna..... 82
Haynes, Justin H..... 61
Hazelton, S. C..... 704
HEAT CONDUCTION:
——conductivity of refractories. Fitz-Gerald 129
——Flow of heat through contact surfaces. Hering.....40, 70
——Flow. Flare of furnace walls. Hering 159
——insulation. FitzGerald 286
——insulation of furnace walls. Hering 97
——insulation. Excessive. Hering..... 70
——insulators. Thermal resistivity. Randolph 287
——losses in electric furnaces. Fitz-Gerald 599
——transmission through conducting surfaces 438

Hedley Gold Milling Co. 112
Henderson, R. M. 321
Hendryx, Wilbur A. 61
Hering, Carl 188
Heroult, P. 824
Hesse, B. C. Portrait 581
Heusler alloys 403
High-tension equipment for electrochemical plants. Wilson 290
Hillebrand, W. F. Portrait 588
Hills, Victor G. 384, 504
Hixon, Hiram W. 255
Hodgson, Joseph 384
Holmes, J. A. Portrait 609, 703
Horne, W. D. Portrait 595
Hoskin, A. J. 255
Hoskins Mfg. Co. 445
Hot-blast stove. Mathesius. (P.) 304
Hough, George J. 255
Howard, L. O. 121
Hunt, R. W. 824
Huntington-Heberlein pots. Pulsifer 157
Huntoon, L. D. 384
Hydraulic classification. Robertson 793
Hydraulic classifier. Shaking inclined-screen. Skinner 343
Hydrocarbons. Synthesis. Pring and Fairlie 586
Hydrochloric acid, alumina, caustic alkalis and cement from clay, salts and lime. Cowles 659
Hydrochloric acid. Chemically pure. Manufacture. Baker 719
Hydrogen. Electrolytic 394
Hydrogen and oxygen. Electrolytic. Tommasini. (P.) 552
Hydrosulphites and dyestuffs 614
Hygiene at Congress. 605, 625
Hypochlorite. Cost. Walker and Gegenheimer 627
Hypochlorite. Electrolytic. Alexander. 655
Hypochlorite for treating water. Bartow 605

I

IDOL of quick returns. Browne 393
Illinois Steel Co. Pyrometer equipment and control. Gordon 331
India rubber at Congress. 615, 616
Induction furnace. (See Furnace. Electric.)
Inspiration. Consolidated Copper Co. 67, 427
Institute of Metals. 10, 549
——London meeting 224, 724
Insulation. Heat. 40, 70, 97, 159, 286, 438, 599
Insulators. Thermal. Conductivities. 129, 287
Insurgency in technical journalism 575
International Congress of Applied Chemistry. (See Congress.)
International electrical units. 283
International Engineering Co. 498
International Oxygen Co. 394
International Rubber Conference 698
Inventors' Guild 126
Iodine coulometer 620
Iron and Steel:
——Allotropy of iron and silver iodide. Benedicks 692
——Alloy steel standards 52
——Alumina in blast-furnace slag. Johnson 812
——Ancient Indian iron 549
——Atomic weight of iron 623
——Balling scrap iron. Lentz. (P.) 247
—— Seelers and Nicholls. (P.) 487
——Bifurcated spout for open-hearth furnaces. MacCollum 588
——Blast furnace. Blowing in. Sweetser 803
——Blast furnace construction. Ladd and Baker. (P.) 487
—— MacMurray. (P.) 488
—— Roberts. (P.) 487
——Briquetting iron borings. Valentine. (P.) 751
——Briquetting flue dust. Hubner. (P.) 696
——California electric pig iron. Microstructure. Lyon and Langenberg 457
——Case hardening. Abbott and Ammon 802
——Case hardening of special steels. Sauveur and Reinhardt 813
——Charcoal iron. Effect of high carbon. Johnson 777
——Charging fine ore and dust. Dougherty. (P.) 432
——Coarse crystallization produced by annealing low-carbon steel. Sherry 667
——Coating with zinc. Burgess. (P.) 556
——Coke-oven gas for open-hearth furnaces. (S.) 47
——Combined carbon in pig iron. Dawkins and Lyon 511
——Combined open-hearth and electric steel furnace. Walker and Gray. (P.) 310
——Concentration of iron ores. Hansell 811
——Converter construction. Zenzes. (P.) 752
——Converter. Frumkin. (P.) 486
——Converter. Blackwood 820
——Converter. Reverberatory furnace process. Mackie and Forwood. (P.) 486
——Corrosion caused by mill scale. Whipple 646
Iron and Steel: (Continued.)
——Corrosion and influence of cinders. Schulte 646
——Corrosion. Influence of various elements. Burgess and Aston 647
——Corrosion of iron by sulphuric acid. Watts 300
——Corrosion - preventive electrolytic method. Clement and Walker 646
——Corrosion. Rate of. Aston and Burgess 647
——Corrosion. Stromeyer 790
——Crucible furnace. Buess. (P.) 821
——Cuyuna Iron Ore Range 802
——Cylindrical furnace for iron ore reduction. Groendal. (P.) 751
——Determining carbon in iron and steel. Robinson 295
——Determining oxygen in iron. Walker and Patrick 629
——Direct and indirect reduction in blast furnace. Levin 420
——Disintegrating nodulizer-kiln rings. Shook. (P.) 751
——Dissociated steam for purifying molten metal. Kelly. (P.) 304
——Distribution of impurities in ingots. Yakovleff 620
——Drying iron ore on the Misabe Range 798
——Effect of nitrogen. Andrew 742
——Electric-converter process. Johnson. (P.) 751
——Electric furnace vs. crucible and Tropenas converter for small castings 54
——Electric furnace in foundry practice. Girod 663
——Electric furnaces in Great Britain 241
——Electric furnace for heating bars and billets. Baily 291
——Electric furnace reduction of iron ores. Lyon 587
——Electric melting of steel scrap. Greene. (P.) 304
——Electric pig iron. (P.) 310
——Electric pig iron. Fleming. (P.) 310
——Electric pig iron for open hearth. Lyon 539
——Electric pig iron. Gas circulation. Richards 289
——Electric steel and U. S. Steel Corporation 323, 371
——Electric steel for rails. Wellman 372
——Electric steel furnace experience at South Chicago. Robinson 373
——Electric steel furnace of Nathusius. Lipin 227
——Electric steel refining at Bethlehem Steel Co. 509
——Electric steel refining. Walker. (P.) 553
——Electric steel. Ejection of gases. Girod. (P.) 818
——Enriching blast with oxygen. Jenkins. (P.) 247
——Exothermic steel. Amsler 559
—— Richards, Gelstharp, Amsler 712
—— Richards, Harden, Amsler 774
——Filtering furnace gases. Müller. (P.) 374
——Finished steel output in 1911 450
——Formation of troostite. Bullens 205
—— Rogers 774
——Function of slag in electric refining. Amberg 601
—— Green and Amberg 656
——Galvanometer for determining recalescence points 250
——Gases evolved from steel. Austin 743
——Growth of cast iron 241
——Heating furnace. Quigley. (P.) 820
——Holding finished steel in electric furnace. Richards. (P.) 818
——Hot-blast stove. Mathesius. (P.) 304
—— Roberts. (P.) 751
——Improved channel furnace of Groendal type. (P.) 752
——Industry in 1911 6
——Iron-carbon and iron-silicon alloys. Magnetic properties. Gumlich 402
——Iron coke for electrodes. Lidoff 593
——Iron industry and the U. S. 507
——Iron-nickel-copper alloy. Clamer. (P.) 308
——Iron-nickel alloy. Non-corrosive. Carnahan. (P.) 818
——Iron ore treated by superheated steam and air. Kerr. (P.) 821
——Iron ore concentration in Minnesota 717
——Iron and potassium carbonate from glauconite. Eckel. (P.) 554
——Iron-silicon ingot. Rustproof. Byrnes. (P.) 821
——Magnetic concentration of zinc-iron ores in Southwestern Wisconsin. Rudolph 278
——Magnetic properties at low temperatures. Gray and Ross 402
——Magnetism of iron-nickel and iron cobalt alloys. Weiss 404
——Manganese and nickel steels. Magnetic properties. Hilpert and Mathesius 742
——Market 13, 69, 186, 194, 260, 329, 390, 452, 508, 652, 711, 773
——Metallic roofing. American ingot iron. Aupperle 57
——Method of revealing segregation in steel ingots. Hadfield 739
Iron and Steel: (Continued.)
——Mixers. (S.) 47
——Modification of pig iron, scrap, and ore process. Paul 741
——Nickel and manganese steels. Magnetism. Hilpert and Colver-Glauert 403
——Nickeliferous pig iron. Thaler. (S.) 429
——Nickel steels. Magnetic properties 113
——Nitrogen removal. Campbell. (P.) 553
——Nomenclature of microscopic constituents. Howe 23
——Oil fuel process for steel castings 86
——Open-hearth furnaces. Dimensions. Pawloff 44
——Open-hearth furnace. Smythe. (P.) 818
——Open-hearth heated with coal dust. Barbanson and Lepersonne. (P.) 485
——Open-hearth process. Improvements in yield. Paul 741
——Open-hearth, Converter, Electric combination. Lamb. (P.) 819
——Output of Steel products 769
——"Pig Steel" from ore in electric furnace. Richards 397
——Protective coating. Lohmannizing 253
——Pure iron. Scott. (P.) 553
——Pure iron. Smith. (P.) 821
——Purifying iron and making steel. Brassert 751
——Pyritic smelting. Halvorsen. (P.) 553
——Pyrometers. Installation and use in steel mills. Gordon 331
——Rail quality and rail duty 123
——Rail steel inspection and manufacture. Hunt 801
——Reduction of iron oxides. Reactions. Pomeranzeff. (S.) 175
——Regenerative furnace for tube welding. Patterson. (P.) 820
——Regenerative - reversing furnace. Knox. (P.) 820
——Ruff's and Wittorff's carbon-iron equilibrium diagrams. Howe and Stoughton 802
——Sintering fine iron-bearing materials by Dwight-Lloyd process. Klugh 162
——Slag, occluded. Elimination. Lock. (P.) 50
——Slag pocket for open-hearth furnaces. (P.) 248
——Soaking pit. Smythe. (P.) 818
——Solidifications of iron castings 160
——Sound ingots. Hadfield 738
—— Anti-piping thermit. Goldschmidt 739
—— Anti-piping thermit. Canaris 232
—— Talbot process 772
——Standard methods of sampling for check analysis. Ass. Am. Steel Mfrs. 701
——Steel Corporation methods of sampling and analysis of pig iron. 650, 668
——Steel. Definition. Richards 265
—— Hibbard and Richards 330
—— Hartman, Hibbard, Richards, 391, 392
——Steel direct from ore. Thomson. (P.) 821
——Steel pipe 113
——Steel for electric purposes. Rübel. (P.) 553
——Steel Production Rate 386
——Steel production in 1911 325
——Steel production statistics 651
——Steel refining. Hibbard. (P.) 553
——Tendencies in open-hearth practice. Carnahan 588
——Titaniferous iron ores. Smelting in electric furnaces. Borchers. (S.) 175
——Titanium treatment. Rossi. (P.) 304, 554
——Titanium treatment of cast iron. Stoughton 588, 801
——Typical analyses of iron blast furnace gases 713
——Upward concentration of kish by flotation. Howe 339
——Utilization of waste heat of open-hearth furnaces in boilers. (S.) 429
——Vanadium steel and dynamic tests 237
——Volume relations of white and gray cast iron. Rosenberg 46
——Welding compound. Corban. (P.) 554
——Wire drawing problems. Longmuir 743
——Yawata Steel Works 18
——Yields. Analysis from practice. Longmuir and Robinson 741
Iron and steel institute. 539, 655, 738
——Leeds meeting 799
——(See also American Iron and Steel Institute.)
Ives, L. E. 764

J

JANTZ & Leist Co. 443
Japan excursion of mining engineers 15
Jacking, D. C. 504
Jigging unsized ores. Wright 759
Jigs. Coarse concentration. Shepard 217
Joining metals. Tucker 725
Jones, James A. 446
Juicing in 708
Jumbo extension mill 771

K

KARR, C. P. ... 446
Kelly foundry ... 568
Kelp. Distillation. Turrentine ... 734
Kemp, James F. Portrait ... 585
Kennedy, John H. ... 446
Kettles. Dopp steam-jacketed ... 253
Krieger, A. O. ... 569

L

LABORATOIRE d'Essais du Conservatoire National of Paris ... 550
Laboratories. FitzGerald and Bennie ... 535
Laboratories for metallurgical education. 258
Labor troubles in Utah and Nevada ... 770
Lactic acid for cleansing filtering mediums ... 249
Lake Superior copper milling practice ... 795
Lake Superior Mining Institute. Houghton meeting ... 677
Lamp. Quartz mercury-vapor. Robinson ... 296
Landis, W. S. ... 384
Leaching solution for gold and silver. Alzugaray. (P.) ... 305
LEAD:
——Bag filtration plants. Eilers ... 588
——Baghouse. Shaking the bag. Meier. (P.) ... 555
——Blast roasting of galena. Bannister. (S.) ... 246
——Complex ores treatment. Ashcroft process. (P.) ... 117
——Concentrating silver-lead ore at Aspen ... 653
——Development of American water-jacket lead blast-furnace. Canby ... 596
——Development of Parkes process for desilverizing lead bullion. Enrich ... 597
——Electrolytic determination ... 108
—— List ... 135
——Electrolytic reduction. Salom. (D.) ... 570
——Electrolytic treatment of mixed lead and zinc sulphide ores. Ketchum. (D.) ... 571
——Horwood process for mixed zinc and lead sulphides. (S.) ... 314
——in Northwest ... 68
——Lead-titanium. Rossi. (P.) ... 308
——plating. Mathers and Overman ... 298
——Problem of complex lead-zinc sulphides ... 5
——Producer and smelter of lead-zinc ores ... 389
——Recovery of dust from smelter fumes by Feld centrifugal gas washer. ... 437
——Refining scrap lead. Asbeck. (P.) ... 433
——Refractory zinc-lead ore treatment. Isherwood. (P.) ... 179
—— French. (P.) ... 816
——Smelting furnace. Partridge. (P.) ... 433
——Tariff ... 124, 262
——Tenor of zinc and lead sulphide concentrates ... 423
Leading molds. (P.) ... 314
Leadville mines. Unwatering ... 327
Leadville Mines Pumping Co. ... 255
LeChatelier, Henry. Howe ... 70
Leggett, Thomas H. ... 569
Lieber, H. ... 824
Lignite coals. Low-grade. Babcock ... 691
Lignites. Constitution and genesis. Thiessen ... 691
Lime. Fused. Refractories. FitzGerald ... 132
Lime-sulphur spray manufacture and eyesight ... 610
Lindmueller, Chas. ... 121
Linings. Acid-proof, of bakelite ... 53
Linseed oil. Olsen and Ratner ... 609
Linville, Clarence P. ... 764
Little, A. D. Portrait ... 582
Liquified Natural Gas. Allen and Burrell 234
Loeb, Morris ... 587
——Obituary ... 715
Lohmannizing ... 253
Lorandite in Rambler Mine ... 188
Lowe, Henry P. ... 122
Lubrication. Economical. Davis ... 677
Lubricants. Temperature and viscosity. Ellis ... 546
Lumen Bearing Co. ... 96, 108
Luminator ... 351, 762

M

McDONALD, B. ... 704
McGraw-Hill Book Co. ... 189
McGregor, A. G., and Repath, Charles H. 255
McKenna, Chas. F. ... 446
MacDonald, Bernard ... 321
Macquisten tube ... 61
Magnesia. Fused. Weintraub. (P.) ... 311
Magnesia Refractories. Fitzgerald ... 131
Magnesium. Resistivity. Northrup ... 277
Magnesium alloys. Casting. Hoffman and Suchy. (P.) ... 491
Magnetic properties of alloys ... 402
Magnetic properties of manganese and nickel steels. Hilpert and Mathesius ... 742
Magnetic properties of nickel steels ... 113
Magnetic removal of iron from mill pulp. Johnston. (S.) ... 815
Magnetic separation at Wellington mill ... 527
Magnetic separation of pyritic blende concentrates. Hugon. (S.) ... 430
Magnetic separation of zinc iron ores in Southwestern Wisconsin. Ruhoff 278
Magnetic theory. Kunz ... 693
Magnetism and stoichiometry ... 402
Magnetism at low temperatures. Gray and Ross ... 402
Magnus, B. ... 703
Manganese compounds. Magnetism. Hilpert and Dieckmann ... 403
Manganese Bronze. Coarse and Skillman 595
Manganese. Estimation in ferrotungsten 303
Manganese. Production. Rockey and Eldridge. (P.) ... 51
Manufacturing. Organized research and analysis. Ferguson ... 609
Market. Iron and Steel ... 13, 69, 186, 194, 260, 329, 390, 452, 508, 652, 711, 773
Market. Non-ferrous metal ... 7, 68, 187, 254, 260, 330, 397, 452, 508, 703, 712, 774
Marysville, Utah ... 453
Mason, W. P. Portrait ... 602
Mason Valley Copper Smelter ... 67, 127, 261, 771
Matheson, W. J. Portrait ... 580
Mathewson, E. P. ... 384
Mayday. Idaho Sint ... 328
Mayer, Frederick J. ... 764
Measurement of temperatures. Richards 604
Melting points of chemical elements ... 530
Mercury cathode cell. (See Sodium chloride. Electrolysis.)
Merrick, Herbert L. ... 562
Metallography. Campbell ... 588
Melting points of fire bricks ... 533
——Kanolt ... 692
Metallurgical engineering. Cosmopolitan quality ... 506
Metallurgist in the steel industry ... 709
Metal market ... 574
Metals. Intercrystalline cohesion in. Rosenhain and Ewen ... 725
Metals. Vaporization. Richards ... 754
Metallography at Bureau of Standards. Burgess ... 467
Metallography sample holder. Goodale ... 477
Metallurgical Co. of America ... 96
Metallurgy at Bureau of Standards. Burgess ... 467
Methane. Determination in producer gas. Arndt ... 391
Metropolitan Museum of Art. Reception ... 599
Metz, H. A. Portrait ... 594
Mexican Mining Journal ... 422
Michigan College of Mines ... 681
Microscopic constituents of iron and steel. Nomenclature. Howe ... 23
Mill construction ... 506
Mill design. Progress. Shepard ... 215
Miller, W. Lash. Portrait ... 285, 583
Mill scale as cause of corrosion. Whipple 646
Mine & Smelter Supply Co. ... 765
Mineral electrodes. Wells ... 620
Minnesota. Iron ore concentration ... 717
Mint. London Royal ... 800
Missouri School of Mines and Metallurgy 452
Mixers. (S.) ... 47
Mixers. Dopp steam-jacketed ... 253
Molybdenite. Concentration ... 110
Molybdenum. Metallurgy ... 110
Molds. Leading. (P.) ... 314
Monel metal. Resistance to corrosion ... 667
Montana. New mills ... 426
Moodie, I. W. D. ... 384
Moore Filter Co. ... 249
Morley, E. W. Portrait ... 579
Motherlode Sheep Creek Mining Co. ... 112
Motion study in mill and laboratory ... 192
Muir, D. N. ... 503
Munning-Loeb Co. ... 52
Munroe, C. E. Portrait ... 591
Murray Plant Bag House ... 589

N

NATIONAL Physical Laboratory ... 303, 424
Nelson Valve Co. ... 413
Nephelometry. Richards ... 605
Nevada Consolidated Copper Co. ... 128, 676
Nevada Hills Co. ... 772
Nevada. Publicity in ... 192
New Zealand. Mining and milling ... 662
Niagara Falls. Fitz Gerald and Bennie Laboratories ... 535
Niagara Falls. The power development situation ... 574
——Bell ... 714
——Evening Sun ... 770
Nichols, W. H. Portrait ... 579
NICKEL:
——catalyzer for pyrophoric substances. Kayser. (P.) ... 556
——Nickeliferous pig iron. Thaler. (S.) 429
——Pantlandite in Sudbury ores. Apgar and Thomas ... 744
——Recovery from plating wash water. Edison. (P.) ... 314
Nikko Copper Works ... 19
Nipissing Mines Co. ... 329
Nitrate. Chilean ... 356, 377
Nitrate of soda analysis ... 605
Nitric acid. Chemically pure. Manufacture. Baker ... 719
NITROGEN:
——Effect on steel. Andrew ... 742
——Fixation as nitrates from air:
—— Eyde ... 617
—— Flame disk. Rothe. (P.) ... 312
—— Nitrolee, S. C. ... 126
——Fixation as ammonia. Bernthsen ... 637
——fixation by alumina and carbon. Tucker and Read ... 745
—— strontium carbides. Tucker and Yang ... 584
—— Serpek process ... 255, 650
Nitroglycerine ... 605
Nitroglycerine. Heating. Snelling and Storm. (S.) ... 755
Nodulizer - Kiln. Disintegrating nodulizer-kiln rings. Shook. (P.) ... 751
Norton Company plant at Chippawa. FitzGerald ... 519
Norton, L. H. ... 122, 321

O

OHIO Brass Co. Sherardizing ... 146
Ohio & Colorado Smelting & Refining Co. 87
Ohio Copper Co. ... 702
Oils at Congress ... 624, 635
Oils. Deodorizing. Frasch ... 73, 75
Oils. Determination of sulphur ... 635
Oil fuel process for steel castings ... 86
Oil. Refining light oil. Weiss ... 691
Oil smelting in British Columbia ... 543
Oil testing ... 614
Oil and water separation. Wright. (P.) 698
Old Dominion Copper Mining and Smelting Co. ... 261
Old Mission Portland Cement Co. ... 763
Omaha Converter Bag House. Eilers ... 590
OPEN-HEARTH:
——Furnaces. Bifurcated spout. MacCollum ... 588
——Furnaces. Dimensions. Pawloff ... 44
——Furnaces. Operated by coke-oven gas 47
——Furnaces. Slag pocket. (P.) ... 248
——Smythe. (P.) ... 818
——Furnaces. Utilization of waste heat in boilers. Pfoser. (S.) ... 429
——Practice. Tendencies. Carnahan ... 588
——Use of coal dust. Barbanson and Lepersonne. (P.) ... 485
Optical pyrometer of Scimatco. Lenk ... 183
——(See also Pyrometer.)
Ore Concentration Co. ... 256
Ore testing. Refined analysis ... 449
Organized research and analysis in manufacturing. Ferguson ... 609
Oxy-acetylene welding. Reich ... 441
——of copper and alloys and aluminium. Carnevali ... 726
——First injector blowpipe ... 70
OXYGEN:
——Electrolytic ... 394
——Electrolytic. Tommasini. (P.) ... 552
——in brass. Turner ... 726
——Influence on properties of metals and alloys. Law ... 725
——Production from bleaching powder. Neumark ... 109
Ozocerite deposits ... 503
Ozone. Leggett. (P.) ... 551
Ozone for water sterilization in St. Petersburgh ... 712

P

PACIFIC Tank & Pipe Co. ... 543
Paintings. Permanency. Bancroft ... 613
Paints at Congress ... 608, 616, 624, 635, 648
Paints. Waterproof. Toch ... 503
Palmaer, Wilh. ... 569
Pans. Vacuum. Calculations. Viola ... 31
——Dopp steam-jacketed ... 253
——with jackets. Viola ... 102
Paper section at Congress ... 616, 624, 636
Parker, Richard A. ... 122, 188
Parkes process. Development in U. S. Eurick ... 597
Parral tank system. Mac Donald ... 48, 434
Parsons, Chas. L. Portrait ... 589
PATENT:
——Decision. Moore-Butters. Vacuum filter ... 791
——system. Abuses. Baekeland ... 273
——system. Proposed revision, 8, 126, 191, 326, 387, 456
—— Symposium ... 276
——Office. Chemical card index. Hill ... 70
Patterson, W. C. ... 188
Paul, Rob. W. ... 256
Peat gas producer and engine. Heinz ... 283
Peat for power ... 655
Pentlandite in Sudbury ores. Apgar and Thomas ... 744
Perchlorate plant in France ... 716
Perkin medal award to Herman Frasch, 14, 73
Perkin medal. History ... 63

Petroleum. Determination of water.... 635
Petroleum. English 303
Petroleum testing 614
Pharmaceutical chemistry at Congress, 606, 616, 625, 636
Philadelphia Coppersmithing Co..... 61
Phosphate, bicalcic, fertilizers. Palmaer. 581
Phosphate deposits 127
Phosphorus. Atomic weight 623
Phosphorus and compounds. Clayton... 634
Photochemistry at Congress. 613, 616, 626, 642
Photochemistry of the future. Ciamician 642
Photography 613
Photography. Reduction potentials. Lidbury 626
"Pig Steel." Richards 397
Pigments. Testing 614
Pinch-effect furnace. Hering..... 196
Pittsburgh Electric Furnace Co..... 496
Pittsburgh-silver peak 328
Plaster. Setting. Recorder. McKenna. 82
PLATING:
——Apparatus. Canning. (P.)..... 314
——Copper. Carbon in..... 685
——Copper. Inorganic addition agents. Spear 685
——Cyanide solutions made from trisalytes. Weber 152
——Dynamo 52
——Lead 298
——Leading molds. (P.)..... 314
——Pickling aluminium. Jahn. (P.)..... 552
——Recovery of copper and nickel from plating wash water. Edison. (P.) 314
——Recovery of zinc from galvanized articles. Broemme and Steinau. (S.) 817
——Rotating cathode. Bennett 298
——Silver anodes. Purity 184
——Zinc. Lemetre. (P.) 314
——Zinc. Sherardizing....146, 300, 556, 744
PLATINUM:
——Action of sulphuric acid. McKay.. 604
——Assay of ores containing the platinum group of metals. Dart..... 219
——electrodes. Light. Gooch and Burdick. (S.) 559
——Extraction and purification. Keller. 788
——group of metals. Volatility..... 302
——melted by oxy-hydrogen gas..... 442
——Production 659
Political economy 626
Porous metals. Production. Hanover.. 509
Porter, John Jermain 384
PORTLAND CEMENT:
——Control of dust. Schmidt..... 611
——Magnesia in 612
——Properties. Reibling and Reyes.... 612
——Setting. Cushman 611
——Testing for free lime 613
Post, E. P.....122, 384
POTASH:
——from alunite. Waggaman..... 734
——from feldspar. Hart 634
——from kelp. Turrentine 734
——from natural silicates. Cushman and Coggeshall 727
——from salines. Turrentine 733
——from silicate rocks. Ross 731
——from wool waste liquor by evaporation. Viola 33
——in Borax Lake 261
——Possibilities of a potash industry in U. S. 727
——Search 11
Potassium carbonate and iron from glauconite. Eckel. (P.) 554
Potential differences. Bioelectric. Bentner 619
Power & Mining Machinery Co..... 760
Precision Instrument Co. 121
Prest-O-Lite Co. 764
Primos Chemical Co..... 764
Priority. Right of employer and employee 327
Probert, Frank H..... 188
Producer. Rotary gas. Chapman..... 821
"Promotion" of metallurgy 454
Publicity in Nevada 192
Pulp classification for concentrating tables. Shepard 218
Pulp control by specific gravity flask. Stadler. (S.) 243
PUMPS:
——Acid-proof stoneware. Kingsbury... 252
——High-vacuum 445
——Vacuum. May-Nelson 500
——Pumping by compressed air. Abrams 316
PYROMETER:
——Continuous-chart recording 763
——Holborn-Kurlbaum. Calibration 418
——Illuminated-dial 186
——Installation and use in steel mills. Gordon 331
——Le Chatelier. Calibration 418
——Optical. Calibration. Shook..... 417
——Optical. Shook 335
——Optical. Scimatco 183
——Radiation. Shook.....238, 334, 478, 534
——Radiation. Calibration. Shook..... 416
——Scimatco optical. Lenk 183
——Wanner. Calibration 417
——Robinson 295
Pyrophoric substances. Nickel catalyser. Kayser. (P.) 556

Q

QUIGLEY, W. S..... 384

R

RADIATION laws. Shook..... 238, 478
Radiation pyrometer. Shook, 238, 334, 416, 534
Radioactivity of soils..... 609
Radio-activity. Standard. Randall..... 297
Radium from carnotite ores. Fischer.... 356
Rafiniesque, G. 446
Rail quality and rail duty..... 123
Rail steel inspection and manufacture. Hunt 801
Rambo, W. C. J..... 384
Ramsay, Sir William..... 764
Rapid Evaporator Co..... 565
Ray Consolidated Copper Co..... 196, 654
Raynolds, Russel 321
Reaction velocity in production of coal. Bergius 648
Reading-Bayonne Steel Casting Co..... 61
Recalescence points determined by double reflecting galvanometer. Schramm 250
Recorder, Automatic, of weight on conveyor 562
Recorder set. Hardness of plasters and cements. McKenna 82
Refractories. Fitz Gerald 129
Refractories. Alundum. Boeck 581
Refractory compound of silicon and carbon. Acheson. (P.)..... 550
Refractory ware. Resistance to temperature changes. Windszus..... 662
Refrigeration for dry-blast. Walter and Carrier 471
——Power required. Smith..... 657
Regulation of industry by government... 259
Reid, Walter L..... 503
Remington, J. P. Portrait..... 603
Repath, Charles H..... 255
RESEARCH:
——and analysis in manufacturing plant. Ferguson 609
——Commercial aspect of. Lindsay.... 144
——in small factory. Lidbury..... 141
——Laboratory working independently. Bennie 143
——organization of Du Pont Powder Co. Comey 141
——Symposium on 66, 140
Resistance. Electric. Sulphates. Somerville 682
Resistance. Electric of oxides. Variation with temperature. Somerville 422
Resistance. Electric of powders. Change with temperature. Somerville 485
Resistivity measurement by Kelvin double-bridge method. Northrup 277
Resistivity. Thermal. Temperature variations. Hering 286
Resistivity. Thermal of insulating. Randolph 287, 288
Resistor of decarburized silicon. Dempster. (P.) 312
Resuscitation from electric shock..... 146
Retort, Zinc, charging machine. Saeger. (P.) 179
Return-air system of pumping. Abrams. 318
Reverberatory furnace for copper ores. Mathewson 591
Richards, Joseph A. 764
Richards, J. W. Portrait..... 590
Richards, Robert H..... 446
Rickard, T. A..... 321
Ricketts & Banks..... 384
ROASTING:
——copper pyrites. Gabrelli. (P.)..... 306
——furnace. Edwards. (P.)..... 51
—— Merton 432
—— for sulphide ores. Meigs. (P.) 697
—— with heat-equalizing chambers. Wedge 817
—— Recuperative for zinc ore. Zellweger. (P.) 307
——Magnetic removal of dust from roaster gases. Wedge. (P.)... 248
——sulphatizing, of copper ores. Wedge 593
Robinson, Cyrus 255
Rock-house practice. De Soller..... 678
——Mercer 680
Rockwell Furnace Co..... 444, 445, 503
Roentgen Ray Research. Coolidge..... 146
Roller, Arthur H..... 504
Rolls. Crushing Frazee. Payne..... 170
Rolls. Heavy-duty crushing. Automatic lateral adjustment. Traylor.... 378
Roofing. Metallic. Aupperle..... 57
Rotating cathode. Bennett..... 298
Roush, G. A..... 384
Rubber 615, 624
Rubber. Artificial. Duisberg..... 622
——Perkin 492, 648
——Armstrong 566
Rubber conference 698
Ruggles, Wm. B..... 543
——(See also Blast-roasting and sintering.)

S

ST. LOUIS Smelting & Refining Co.... 135
Salida 63
Salida. Sinter-roasting 87
Salines as a source of potash. Turrentine 733
Samples. Preparation for assaying. Blyth. (S.) 815
Sampling. Automatic. Shepard..... 216
——and analysis methods U. S. Steel Corporation 650
——Standard methods of sampling for check analysis. Ass. Am. Steel Mfrs. 701
San Francisco fair 1915..... 708
Sang, Alfred 446
Sargent, E. H., & Co..... 499
Saunders, L. E..... 824
Savelsberg converters. Pulsifer..... 158
Schaeffer & Budenberg Mfg. Co..... 160
Schenkel, Fred G..... 384
Schumacher briquetting process. Richards 165
Schumacher, Wilhelm 764
Scientific Materials Co..... 51, 445
Setting of plaster and cement. Recorder McKenna 82
Screw conveyor. End flights. For abrasive materials. Link Belt Co.. 823
Sharwood, W. J..... 503
Shepard, Frank E..... 188
Sheehan, D. F..... 61
Sherardizing 146, 744
——Johnson and Woolrich..... 300
——Modification by Burgess. (P.)..... 556
Shisaka Island smelter..... 16
Shock. Electric. Resuscitation..... 146
Silica. Fused. Ware. Use in chemical industries. Marshall 248
Silicate industries 611
Silicon carbide. (See Carbide of silicon.)
Silicon-carbon refractory. Acheson. (P.) 550
Silicon, decarburized. Resistor. Dempster. (P.) 312
Silicon-iron ingot. Rustproof. Byrnes. (P.) 821
Silico-titanium. Rossi. (P.)..... 308
SILVER:
——anodes. Purity in plating. Brown.. 184
——Arsenical silver ores. Fink. (P.).. 177
——Bismuth alloys. Refining. Lacey.. 747
——Concentrating silver-lead ores at Aspen 653
——Cupels and cupellation. Benner and Hartmann. (S.) 246
——Cyanidation-amalgamation of Nipissing silver ores. (S.)..... 558
——Electrolytic. Hulett 620
——Parkes process of desilvering lead bullion. Enrich 597
——(See also Gold and Silver and Cyanide Process.)
Silver iodide. Allotropy. Benedicks.... 692
Simonds, F. M..... 188
SINTERING:
——and briquetting flue dust. Vogel... 164
——Dwight-Lloyd..... 188, 310, 375, 433
—— Paper by Dwight..... 595
—— Pulsifer 159
—— Sinter-roasting with Dwight-Lloyd machines at Salida.. 87
——fine iron-bearing materials by Dwight-Lloyd process. Klugh..... 162
——fines. West. (P.)..... 488
——Yost. (P.) 557
——(See also Blast-Roasting, Agglomeration, Balling, Briquetting.)
SLAG:
——Alumina in copper slag. Buchanan and Lee 795
—— Bellinger. (S.) 693
—— Fulton 813
——Alumina in iron blast-furnace slag. Johnson 812
——Copper reverberatory furnace. Fulton 813
——disposal at Granby smelter.... 113, 152
——in electric steel refining. Amberg.. 601
—— Greene and Amberg 656
——Occluded. Elimination. Lock. (P.) 50
Stamps. Performance. Degenhart. (S.) 815
SLIME:
——Agitation. Parral tank 48, 434
——Concentration by centrifugal separation. Peck 235
——concentrators. Multiple-deck. Willfey 676
——density table. Lowden 369
——filter. Kelly. (P.)..... 697
——Filter. Moore-Butters patent suit decision 791
——Filtration. Young. (S.)..... 48
——Thickener and decanter. Lamb. (P.) 50
——treatment in Victoria. Nicol. (S.) 430
Smee's theory of electrolytic deposits. Bancroft 300
Smelter fumes. (See Fumes.)
Smith, Emery & Co..... 255, 763
Smoke. European laws. Kershaw..... 756
Smoke. How and why it is injurious. Benner 735
Smoke and the Sheffield steel industry.. 241
Smokestack, Wislicenus, for fume dilution 97
Smuggler-Union mill. Remodeling..... 195

Soaking pit. Smythe. (P.) 818
Soaps. Heavy metal. Fay and Hamilton 608
SODIUM CHLORIDE ELECTROLYSIS:
——Caustic and chlorine. Mercury cathode. Croston. (P.) 552
—— Frank. (P.) 552
—— Wilderman 628
——Chlorates and perchlorates 716
——Cyanide. Acker. (P.) 312
——Hypochlorite. Alexander 655
—— Walker and Gegenheimer 627
Sodium as reducing agent for chlorides. Hunter 623
Soils. Chemistry 609, 625
Solidification of iron castings 160
Sorting, Hand, of ores. Shepard 215
Southern Aluminium Co. 445, 763
Sowers Mfg. Co. 253
Specific gravity balance 605
Specific gravity flask for pulp measurement. Stadler. (S.) 243
Spelter. (See Zinc.)
Stamp mill. Assailing the 768
Stamp. Nissen. Tests on the Rand. (S.) 176
Stamp. Nordberg steam 795
Standardization of electrical machinery. 174
Starch at Congress 608, 616, 624, 636
Steam trap system 762
Steel. (See Iron and Steel.)
Stellite. Cobalt-chrominum alloys. Haynes 804
Still. Electric. Allen 606, 682
Still. Self-cleaning 56
Stills for manufacture of chemically pure acids. Baker 719
Still. (See also Distillation.)
Stobie Steel Co. 763
Stoneware pump. Acid-proof. Kingsbury 252
Stoneware vessel. Armored. Kingsbury 438
Storage battery. Eutectic alloys for production of porous plates. Hannover 509
Storage battery. Regeneration of sulphated. Bennett and Cole 300
Storms, W. H. 569
Stoughton, B. 384
Stratton's Independence 771
Strength, compressive, of alloys. Measurement. Huber 96
Sugar chemistry at Congress 607, 616, 624, 635
Sulphates. Decomposition of metallic. Hofman and Wanjukow. (S.) 172, 596, 694
Sulphates. Electric resistance. Somerville 682
Sulphur. Calcasien sulphur mines and sulphur oil fields of the Coastal Plain. Lucas 80
Sulphur. Frasch process 74, 76
Sulphur. Mexican 281
Sulphur dioxide removal from smelter fumes. Whitney. (P.) 313
SULPHURIC ACID:
——Action on platinum. McKay 604
——American industry. Wedge 631
——Chemically pure. Manufacture. Baker 719
——Combination of contact process with lead chamber. Wilke 633
——Consumption 188
——Contact acid from brimstone. Patterson and Cheney 630
——Manufacture at Ducktown, Tenn. 405
——Symposium at Congress 630
Surface combustion. Lucke and Bone .. 409
Swart, W. G. 321

T

TAR. Fractional distillation by electric heat. Benson 544
Tariff. Lead and zinc 124, 262
Tartaric acid evaporation 32
Teaching technical German in engineering schools. Scholz 213
Temiskaming Mining Co. 196
Temperature measurements and control. Richards 604
Temperature and properties of matter. Northrup 352
Temperature scale. Burgess 692
Temperature and strength of metals and alloys 160
Temperature and viscosity of lubricants. Ellis 546
Temperature. Very high. Determination. Shook 478
Ten years of an insurgent engineering journal 574
Tennessee Copper Co. Manufacture of sulphuric acid 405
Tensile strength of electrolytic copper. Bennett 298
Tests. Value of mechanical. Stromeyer 46
Tetranitroaniline 605
Thallium Amalgams. Richards and Daniels 619
Theory. Value in metallurgical practice. 768
Thermal ohms 42
Thermal resistivity. Temperature variations. Hering 286
Thermal. (See also Heat.)
Thermit. Antipiping in ingots. Canaris. 232
——Goldschmidt 739
Thermit process. Welding shaft 61
Thermocouples. Base-metal. Kowalke .. 585
Thiogen system of fume control 710
Thomas, Richard H. 446
Thomas Co., Arthur H. 380
Thordardson Electric Mfg. Co. 60
Thoria. Extraction. Baskerville 634
TIN:
——Concentration in Bolivia. Adams. (S.) 316
——Detinning. Weber. (P.) 307
——Detinning in Italy 202
——Dressing. Ruthenburg 411
——Malaysian exports 226
——Output of tinplate mills 255
——Search for 563
——Tin-titanium. Rossi. (P.) 308
Titanic disaster 259, 272
TITANIUM:
——in foundry practice and the electric furnace. Petinot 713
——in non-ferrous metallurgy. Rossi. (P.) 308
——Dioxide. Formation heat 255
——Rossi patents. (P.) 308
——Titaniferous iron ores. Smelting in electric furnace. Borchers. (S.) 175
——Titanium Alloy Mfg. Co. 765
——Treatment of cast iron. Stoughton. 588, 801
——Treatment of steel. Rossi. (P.) .304, 554
Toch Bros. 503
Toch, Maximilian. Portrait 599
Tonopah district 67
Transformers. Flexible step-up 60
Trap. Steam 762
Trisalytes for making cyanide plating baths. Weber 152
Troostite. Mechanism of formation. Bullens 205
——Rogers 774
Tube mill. Tebble loads. Dowling. (S.) 315
Tube mills. Shepard 219
Tube mill. Introduction into metallurgy. Abbe 330
TUNGSTEN:
——Ductile. Fink 584, 684
——lamp filament. Zerning. (P.) 308
——Ore production 255

U

UEHLING Instrument Co. 497
Union Sulphur Co. 188
U. S. Geological Survey 676
U. S. Smelting, Refining and Mining Co. 262
U. S. Steel Corporation. Methods of sampling and analysis of pig iron, 650, 668
——Report 192
United States Reduction and Refining Co. 328
Units for simplfying calculations. Hering 285, 584
Units. International electrical 283
University education. Objects. Browne. 393
University of Illinois. Mining laboratory 471
Uranium from carnotite ores. Fischer .. 356
Uranium in Colorado and Utah 328
Utah Copper Co. 681, 772
Utah. Metallurgical activity 427

V

VACUUM:
——drying. Problems. Devine 699
——evaporators. Condensers. Viola 407
—— (See also Evaporators.)
——filter. Barnes. (P.) 753
——filter. Continuous. Kier. (P.) 431
——filter. Continuous. Rothwell. (P.) 488
——filter. Holland. (P.) 753
——filter. Moore-Butters patent decision 791
——filter. Traylor. (P.) 489
——filtration. Modications 708
——furnace metallurgy. Fink 296
——pans. Calculations. Viola 31
——pans. Dopp steam-jacketed 253
——pans with jackets. Viola 102
——plants. Condensers. Viola 366
——pump. May-Nelson 500
Valve. Reversing for regenerative furnaces. Gille. (P.) 554
Vanadium from carnotite and sandstone concentrates. Fischer 469
Vanadium in Colorado and Utah 328
Vanadium. Recovery from ores. Saklatwalla. (P.) 308
Vanadium steel and dynamic tests 237
Van Diest, E. C. 504
Vaporization of metals. Richards 754
Varnishes at Congress 616, 635
Verein Deutscher Chemiker. New York meeting 577
Vickers, Charles 703
Viola, B. 824
Viscosity and temperature of lubricants. Ellis 546
Vivian, Georgie G. 122
Volatility of metals of platinum group .. 302
von Bernewitz, M. W. 504

W

WALKER, W. H. 606
Walker, W. R. 323
Walls of furnaces. Flare. Hering 159
Water. Electrolytic decomposition. Tommasini. (P.) 552
Water and oil separation. Wright. (P.) 698
Water purification by forced oxidation .. 86
Water sterilization by ozone in St. Petersburgh 712
Water testing. Dionic 251
Water treatment 605, 606
Watson, R. B. 703
Wage and bonus systems 26
Weaver, W. D. Retirement from Electrical World 284
Webster, Paul W. 704
Weedon, Wm. S. 764
Weeks, F. D. 63
Weightometer. Merrick 562
Weight recorder for conveyor 562
WELDING:
——compound. Corban. (P.) 554
——metals. Tucker 725
——Oxy-acetylene of copper and aluminium. Carnevali 726
——Oxy-acetylene. First injector blowpipe 70
——Oxy-acetylene. Reich 441
——Thermit 61
Welfare of employees 710
Wellcome photographic exposure record. 188
Wellington Mines Co. 527
Welsh, Norval J. 188
Wertenweiler, Otto 569
Wesson, David. Portrait 598
Western metallurgical field 11, 67, 127, 195, 261, 327, 426, 452, 563, 653, 710, 770
White, Edw. D. Portrait 608
White, Mansel 764
Whitney, W. R. 607
Wiard, Edward S. 61
Wilfley table 765
Wilson, Philip D. 61
Wilson, Hugh M. 824
Wire drawing problems. Langmuir 743
Wire rope. Flexibility 356
Wolcott, E. L. 569
Wolff, R. H. 446
Wood flotation machine 132
Wool waste liquor. Evaporation for recovery of potash. Viola 33
Women. Advancement of. Mrs. Baekland 683
Wood preservatives. Weiss 608
Wyatt, F. Portrait 600
Wysor, R. J. 384

Y

YAWATA Steel Works 18

Z

ZINC:
——Alloys with aluminium 424
——Alloys with copper. Bancroft and Lohr 690
—— Jones. (P.) 816
—— Microstructure. Carpenter 725
——"Atomized" zinc as precipitant of gold and silver. Neil. (P.) 431
——Baghouse. Shaking the bag. Meier. (P.) 555
——Bisulphite process. Hommel and Durant. (P.) 179
——Blue powder treatment. Thierry. (P.) 491
——California zinc-copper ores treatment 564
——Causes of non-success in electric zinc smelting. Louvrier 747
——Chemical and physical reactions in zinc retort. Clerc 399
——Clerc patents. (P.) 556
——Colorado production 382
——Complete ores treatment. Ashcroft. (P.) 117
——Condensation problem in electric zinc smelting 451
——Electric zinc smelting furnace. Johnson 281
——Electric zinc smelting. Johnson 537
—— Ingalls 481
—— Thierry 490
——Electrolytic ore process. Mohr. (D.) 571
——Electrolytic process for zinc, copper, iron ores. Ashcroft. (D.) 704
——Electrolytic process. Choate. (D.), 62, 122
——Electrolytic process. Reid-Hering ... 47
——Electrolytic production from ores. Burghardt and Rigg. (D.) 570
——Electrolytic recovery from ores. Emmens. (D.) 571
——Electrolytic reduction of blue powder. Bleecker 300
——Electrolytic treatment of mixed lead and zinc sulphide ores. Ketchum. (D.) 571
——Electrostatic separation of zinc-copper middling. Houser. (S.) 49
——Flotation at Butte and Superior 426
——French process 112

ZINC: (Continued.)
——Fuel economy. Dunn..... 499
——Horwood process for mixed zinc and lead sulphides. (S.)..... 314
——in Montana 68
——in Northwest 68
——Inversion in copper-zinc alloys. Carpenter 224
——Magnetic concentration of pyritic blende concentrates. Hugon. (S.) 430
——Magnetic separation of zinc-iron ores in Southwestern Wisconsin. Ruhoff 278
——Muffle charging and cleaning machine. Saeger. (P.)..... 179
——Parkinson furnace. Dunn..... 498
——Plating. Lemetre. (P.)..... 314
ZINC: (Continued.)
——Plating on iron. Burgess. (P.)..... 556
——Preheater for zinc furnace. Oritzheim. (P.)..... 697
——Preparation of zinc oxide for smelting. MacIvor and Hommel. (P.) 51
——Problem of complex zinc-lead sulphides 5
——Producer and smelter of lead-zinc ores 389
——Production in 1911, 1912..... 681
——Recovery from galvanized articles. (S.) 817
——Recuperative zinc ore roaster. Zellweger. (P.)..... 307
—— French 816
ZINC: (Continued.)
——Refractory zinc-lead ore treatment. Isherwood. (P.) 179
——Retort furnace. de Saulles. (P.)... 816
——Sherardizing 146, 300
——Simultaneous electrolytic deposition of zinc and copper. Thompson.. 458
——Smelting. Siebenthal. (S.)..... 49
——Tariff 124, 262
——Tendencies in metallurgy..... 450
——Tenor of zinc and lead sulphide concentrates 423
——Volatility of zinc oxide. Kowalke.. 300
——ore dressing in Colorado. Parmelee 527
——Zinc retort with copper bottom. Clerc 463
——Zinc-titanium. Rossi. (P.)..... 308
Zinc white. Manufacture. Hughes. (P.) 179

AUTHORS' INDEX

ABBE, R. F. The introduction of the tube mill into metallurgy..... 330
Abbott, Robert R. Action of various commercial carbonizing materials.. 802
Abrams, Herbert T. Pumping by compressed air 316
Alderson, Victor C. The experimental ore dressing and metallurgical plant of the Colorado School of Mines 269
Allen, Irving C. An electric still...606, 882
——— and Jacobs, Walter A. Determination of water in petroleum..... 635
——— and Robertson, T. W. Determination of sulphur in oils..... 635
Amberg, Richard. The function of the slag in electric steel refining, 601. 656
Ammon, Mark A. Measurements and relations of hardness and depth of carbonization in case-hardened steel 802
Amsler, Walter O. Exothermic steel, 559, 712, 776
Andrew, J. H. Iron and nitrogen..... 742
Andrews, Charles W. By-product coke.. 809
Armstrong, Henry E. The production of rubber—with or against nature. 566
Armstrong, L. K. The lead and zinc tariff 262
Arndt, K. Determination of methane in producer gas by means of copper oxide 391
Aston, James, and Burgess, Charles F. Rates of rusting of iron and steel 647
——Influence of various elements on the corrodibility of iron..... 647
Aupperle, James A. Metallic roofing.... 57
Austin, G. Wesley. Gases evolved from steel 743
Ayres, W. S. Coal preparation 691

BABCOCK, E. J. Low-grade lignite coals 691
Backeland, Leo. H. An American welcome 513
——The abuses of our patent system.. 273
Backeland, Mrs. Leo. H. The advancement of women..... 683
Bahney, L. W. Application of the alundum extraction thimble to the determination of copper..... 737
Bailer, John C. Chemical formulæ..... 262
Bailey, Thaddeus F. Electric furnaces for heating bars and billets.... 291
Baker, Russell E. Frary, Francis C., and Mitchell, Ralph W. The direct production of positives in the camera by means of thiourea and its compounds 613
Baker, J. T. Problems in the manufacture of chemically pure acids.. 719
Bancroft, Wilder D. Electric endosmose 298
——Smee's theory of electrolytic deposits 300
——The permanency of paintings..... 613
——and Lohr, J. M. Copper-zinc alloys 690
——Walker, L. V., and Miller, C. F. Carborundum 685
——Elsenhast, Arthur S., and Grant George E. Rapid testing of dyes and pigments 614
Bard, E. E., and Calhane, D. F. An efficient electric furnace for high temperatures 461
Barrows, Walter, and Zapffe, Carl. Cuyuna iron ore range 802
Baskerville, Charles. Extraction of thoria 634
Baxter, Gregory Paul, and Moore, Chas. James. Atomic weight of phosphorous 623
Bell, Louis. Two aspects of "Conservation" and the Niagara power situation 714
Benedicks, Carl. Allotropy of iron and silver iodide 692
Bengough, G. D. Properties of alloys at high temperatures 225
Benner, Raymond C. How and why smoke is injurious 735
Bennett, Dr. C. W. Rotating cathode... 298
———Tensile strength of electrolytic copper 298
———and Cole, D. S. Regeneration of sulphated storage cells..... 300
Bennie, P. McN. The research laboratory working independently.... 143
Benson, H. K. The fractional distillation of wood tar by electrical heat.. 544
Bergius, F. R. Artificial production of coal 648
Bernthsen, H. A. Synthetic ammonia realized 637
Bert, Edward. Drying air for blast furnaces 510
Bertrand, M. Gabriel. The part played by infinitely small quantities of chemicals in biological chemistry 598
Beutner, Reinhard. Phase potentials and bioelectric potential differences, 297. 619
Blauvelt, William Hutton. Coke..... 806
Bleeker, Warren F. Electrolytic reduction of blue powder..... 300
Boeck, P. A. Alundum as a refractory material 581
Bone, William A. Surface combustion.. 409
Bradley, Linn. Electrical precipitation of suspended particles 686
Brown, Denton J., and Schoch, Eugene P. Electro-analysis with acidified chloride electrolytes 684
Brown, J. L. R. Purity a requisite for silver electroplating anodes.... 184
Brown, J. W., Burgess, C. F., Lovereridge, F. H., and Sharp, C. H. Tentative report of American Electrochemical Society committee on dry cell tests..... 361
Browne, David H. The idol of quick returns 393
Buchanan, J., and Lee, F. E. The rôle of alumina in copper-slag formation 795
Bullens, Denison K. Mechanism of the formation of troostite..... 205
Burgess, Charles F., and Aston, James. Influence of various elements on the Corrodibility of Iron..... 647
———Brown, J. W., Lovereridge, F. H., and Sharp, C. H. Tentative report of American Electrochemical Society committee on dry cell tests 361
Burgess, George K. Temperature scale. 692
———Metallography and metallurgy at the Bureau of Standards..... 467
Burkheiser, Karl. Purifying coal gas with recovery of by-products... 691

CALHANE, D. F., and Bard, E. E. An efficient electric furnace for high temperatures 461
Camp, J. M. The methods of the United States Steel Corporation for the commercial sampling and analysis of pig iron 668
Campbell, J. R. Neutral coke..... 690
Canaris, C. The use of anti-piping thermit in ingots..... 232
Canby, R. C. Development of the American water-jacket lead blast-furnace 596
Carnevali, F. Autogeneous welding by means of oxygen and acetylene of copper and its principal alloys, and of aluminium..... 726
Carpenter, H. C. H. Inversion in copper-zinc alloys 224
———The structural resolution of the pure copper-zinc beta constituent into alpha plus gamma..... 725
———The effect of other metals on the structure of the beta constituent in copper-zinc alloys..... 725
Carrier, W. H. Drying air for blast furnaces 475
Chandler, Charles F. Presentation of the Perkin medal to Herman Frasch 73
Chauvenet, Regis. Calculation of furnace charges..... 36, 104, 135, 220, 338
Cheney, L. B., and Patterson, G. W. Contact sulphuric acid from brimstone 630
Chesley, A. L. Chow, C., and Spear, Elwood, B. Carbon in electrolytic copper 685
Chow, C., Chesley, A. L., and Spear, Elwood B. Carbon in electrolytic copper 685
Ciamician, Giacomo. The photo-chemistry of the future..... 642
Clamer, G. H., & Hering, Carl. The electric furnace for brass melting... 702
Clarkson, Philip S. The development of hydrosulphites in their relation to modern dyestuffs 614
Clayton, E. G. Phosphorus and its compounds 634
Clement, J. K., and Walker, L. V. Electrolytic method for the prevention or the corrosion of iron and steel 646
Clerc, F. L. The chemical and physical reactions in a zinc retort..... 399
———A zinc retort with a copper bottom 463
Coggeshall, Geo. W., and Cushman Allerton, S. The production of available potash from the natural silicates 727
Cohen, Louis. Miscellaneous cyanide experiments 203
Cole, D. S., and Bennett, C. W. Regeneration of sulphated storage cells 300
Colver-Glauert, E., and Hilpert, S. Magnetism of nickel and manganese steels 403
Comey, Arthur M. Certain phases of technical chemical research..... 141
Coolidge, W. D. Roentgen ray research. 146
Corning, C. R., and Stone, Geo. C. The present situation in the American Institute of Mining Engineers 512
Corse, Wm. M., and Skillman, V. Manganese bronze tests 595
Cottrell, F. G. Dust precipitations by electrostatic means..... 172
Cowles, Alfred H. Alumina, hydrochloric acid, caustic alkalis and a white hydraulic cement by a new process from salt, clay and lime... 659
Curry, B. E., and Smith, T. O. A study of soil potassium..... 735
Curtman, L. J., and Frankel, E. M. A method for the systematic qualitative detection of barium and strontium 645
———and Dubin, H. The influence of non-volatile organic matter and certain acids on the precipitation of the ammonium sulphide group of metals..... 643
———and St. John, A. D. A study of the sensitiveness of the bead and lead dioxide tests for manganese with special reference to the interference of iron..... 645
———and St. John, A. D. The determination of the sensitiveness of the hydroxide reactions for the common metals..... 645
Cushman, Allerton S., and Coggeshall, Geo. W. The production of available potash from the natural silicates 727

DANIELS, F., and Richards, Theodore W. The electrochemical behaviour of very concentrated thallium amalgams..... 619

Dart, A. C. The assay of ores containing the platinum group of metals 219
Davis, W. W. Economical lubrication... 677
Dawkins, C. T. Some observations on the amount of combined carbon in pig iron... 511
Day, Arthur L. Geophysical research... 90
Deerr, Noel. The status of cane sugar manufacture in the Hawaiian Islands ... 607
DeSoller, Tenney C. Recent rock-house practice in the copper country.. 678
Devine, J. P. Problems in vacuum drying ... 699
Dieckman, T., and Hilpert, S. Magnetism of manganese compounds... 403
Doremus, Chas. A. Influence of Paris congresses ... 516
Dubin, H., and Curtman, L. J. The influence of non-volatile organic matter and certain acids on the precipitation of the ammonium sulphide group of metals... 645
Duisberg, Carl. The latest achievements and problems of the chemical industry ... 620
Dunn, Joseph A. Fuel economy in zinc metallurgy, power production and mining ... 498
Dwight, Arthur S. The Dwight & Lloyd process of roasting an sintering 595

EILERS, Anton. Notes on bag filtration plants ... 588
Ellis, R. L. The relation between temperature and viscosity of lubricants ... 546
Elsenbast, Arthur S., Grant, George E., and Bancroft, Wilder D. Rapid testing of dyes and pigments.... 614
Emrich, Horace H. Electrolytic copper refining ... 171
Emrich, Ernest F. The development of the Parkes process in the United States ... 597
Evershed, S. The dionic water tester... 251
Eyde, Samuel. Oxidation of atmospheric nitrogen and the development of the resulting industries of Norway ... 617

FAIRLIE, D. M., and Pring, J. N. Synthesis of hydrocarbons... 586
Fay, Irving W., and Hamilton, S. G. Heavy metal soaps, their formation and solubility in spirits of turpentine, linseed oil and petroleum oils ... 608
Feld, Walther. A centrifugal gas-washer 436
——Ammonium sulphate from ammonia and sulphur dioxide... 395
Ferguson, William C. A plan for organized research and analytical chemistry in successful chemical manufacturing ... 609
Fink, C. G. Ductile Tungsten.....580, 684
——Vacuum furnace metallurgy..... 296
Fischer, Siegfried. The concentration of carnotite ores, and some similar ores ... 356
——The extraction of vanadium from carnotite and vanadiferous sandstone concentrates... 469
FitzGerald, Francis A. J. Refractories.. 128
——Heat losses in electric furnaces.... 599
——Crystolon-silicon carbide..... 519
——Electric induction furnace design and electric steel furnaces..... 71
Frank, K. G. Electric steel refining..... 656
Frankel, E. M., and Curtman, L. J. A method for the systematic qualitative detection of barium and strontium ... 645
Frary, Francis C., Mitchell, Ralph W., and Baker, Russell, E. The direct production of positives in the camera by means of thiourea and its compounds ... 613
Frasch, Herman. Address on his work in the oil and sulphur industries on the occasion of the award of the Perkin medal... 75
Frey, W. H., and Robinson, W. O. The use of ground rocks and ground minerals as fertilizers... 735
Fulton, Chas. H. The series of copper slags ... 813

GAYNOR, Wm. Address at the banquet of International Congress of Applied Chemistry... 683
Gegenheimer, Ralph E., and Walker, William H. Cost of hypochlorite ... 627
Gelstharp, F. Exothermic steel..... 712
Girod, Paul. The electric steel furnace in foundry practice..... 663
Goldschmidt, Hans. Improving soundness of steel by thermit..... 739
Goodale, Stephen L. Metallography sample holder ... 477
Gordon, C. S. The installation and use of pyrometers in steel mills.... 331
Grant, George E., Bancroft, Wilder D., and Elsenbast, Arthur S. Rapid testing of dyes and pigments... 614
Gray, James G., and Ross, Dr. Alexander D. Magnetism at low temperatures ... 402
Greaves, R. H. The influence of oxygen on copper containing arsenic or antimony ... 225
Greene, Albert E. Function of slag in steel refining ... 656
——Electric heating and removal of phosphorus from iron..... 600
Gumlich, Dr. E. Magnetic properties of iron-carbon and iron-silicon alloys. ... 402

HADFIELD, Sir Robert. Revealing segregation in steel ingots..... 739
——Method of producing sound ingots ... 738
Hadley, Harry F., and McFarland, David C. The use of the higher phenols in testing for free lime in Portland cement ... 613
Hambuechen, Carl, and Ruhoff, O. E. Dry cells ... 685
——Short-circuit current and deterioration of dry cells ... 364
Hamilton, S. G., and Fay, Irving W. Heavy metal soaps, their formation and solubility in spirits of turpentine, linseed oil and petroleum oils ... 608
Handy, James Otis. Sampling and assaying of silver ores containing cobalt, nickel and arsenic..... 688
Hannover, H. I. The production of porous metals ... 509
Hansell, Nils V. Groendal briquetting process ... 166
——Concentration of iron ores..... 811
Hansen, C. A. Electric melting for copper and brass ... 703
Harden, John. Exothermic steel..... 776
Hart, Edward. Potash, silica and alumina from feldspar..... 634
Hartman, Axel. Steel..... 391
Hartman, William E. By-product coke ovens in America..... 521
Haynes, Elwood. Cobalt-chromium alloys ... 804
Hesing, Carl. Flow of heat through contact surfaces ... 40-70
——Excessive heat insulation..... 70
——Electric energy from cohesive forces ... 14
——Temperature variations of thermal resistivities ... 286
——Pinch-effect furnace ... 196
——Simplifying calculations by the proper choice of units..... 584
——The thermal insulation of furnace walls ... 97
——Uniformity and simplicity in electrochemical and electrothermal calculations ... 285
——The flare of furnace walls..... 159
——and Clamer, G. H. The electric furnace for brass melting..... 702
Heroult, Paul. Electric steel refining... 600
Heusler, Dr. F., and Take, Dr. E. Heusler alloys ... 403
Hibbard, Henry D. What is steel?..330, 392
Hill, Edwin A. Chemical card index of patent office ... 70
Hilpert, Dr. S., and Dieckmann, Dr. T. Magnetism of manganese compounds ... 403
——and Mathesius, Dr. W. The magnetic properties of manganese and nickel steels ... 742
——and Colver-Glauert, Dr. E. Magnetism of nickel and manganese steels ... 403
Hiorth, Albert. Electric induction furnace design nad electric steel furnaces ... 71
Hofman, H. O., and Wanjukoff, Mr. The decomposition of metallic sulphates at elevated temperatures ... 596
——and Wanjukow, W. Decomposition temperatures ... 172
Howe, Henry M. The upward concentration of kish by flotation..... 359
——Nomenclature of the microscopic constituents of iron and steel.. 23
——Henry Le Chatelier..... 70
——Ruffs and Wittorff's carbon iron equilibrium diagrams ... 802
Howell, S. M. The crystallization of carbon by artificial means..... 197
Huber, J. R. A method for measuring the compressive strength of alloys ... 96
Hunt, Robert W. Rail steel inspection ducing agent for chlorides..... 623
Huntington, A. K. The effect of temperatures higher than atmospheric on tensile tests of copper and its alloys..... 724

INGALLS, Walter Renton. The electric smelting of zinc ore..... 481

JACOBS, E. Metallurgy in British Columbia ... 112
Jacobs, Walter A., and Allen, Irving C. Determination of water in petroleum ... 635
Johnson, Arden R., and Woolrich, Willis. Sherardizing ... 300
Johnson, Charles F. The electric zinc smelting furnace ... 281
Johnson, F. The effect of tin and lead on the microstructure of brass.. 226
——The impurities in "tough-pitch" copper, with chief reference to antimony ... 726
Johnson, J. E., Jr. Effect of high cargess, C. F., and Brown, C. F. Tentative report of American Electrochemical Society Committee on Dry Cells..... 361
and manufacture ... 801
Hunter, Matthew A. Sodium as a reabon on the quality of charcoal iron ... 777
——Iron blast-furnace slags..... 812
Johnson, Woolsey McA. Notes on electric zinc smelting..... 537

KANOLT, C. W. Melting points of firebricks ... 692
Keller, Harry F. Extraction and purification of platinum ... 788
Kershaw, John B. C. The laws in force in Europe against the emisssion of black smoke ... 756
Kingsbury, Percy C. A new acid-proof pump ... 252
——New armored stoneware vessel.... 438
Klein, A. A., and Phillips, A. J. Magnesia in Portland cement..... 612
Klugh, J. G. Sintering of fine iron-bearing materials by the Dwight-Lloyd process ... 162
Kowalke, O. L. Volatility of zinc oxide. 300
——Base metal thermocouples..... 585
Kunz, Jacob. Magnetic theory..... 693

LACEY, Dr. William N. Electrolytic refining of silver-bismuth alloys. 747
Laist, Frederick. Chemistry of the reduction processes in use at Anaconda, Mont. ... 592
Landis, Walter S. Agglomeration of fine materials ... 164
Laney, F. B., and Phalen, W. C. Manufacture of sulphuric acid at Ducktown, Tenn. ... 405
Langenberg, F. C., and Lyon, D. A. A microscopic study of California electric furnace pig iron. 457
Law, Edward F. The influence of oxygen on the properties of metals and alloys ... 725
Lawrence, James C. Carbon monoxide and dioxide ... 14
Lee, F. E., and Buchanan, J. The role of alumina in copper, slag formation. ... 795
Lee, George M. The Granby smelter.. 147
Leffler, J. A., and Nystrom, E. Electric furnace pig iron at Trollhattan. ...71, 413
Leighton, Alan, and Perley, G. A. Preliminary studies on direct photographic positives ... 613
Lenk, Arthur. The latest progress in optical pyrometry ... 183
Levin, M. Direct and indirect reduction in the blast furnace..... 420
Lewis, Ernest A. The disadvantages of the new American standard copper specifications ... 540
Lidbury, F. Austin. The influence of dilution on the reduction potentials of developing solutions..... 626
——The effect of changes of composition on the reduction potential of developing solutions..... 626
——The measurement of potential reductions of development..... 626
——Research in the small factory..... 140
Lidoff, A. P. Iron-coke..... 593
Lindsay, Charles F. The commercial aspect of research..... 144
Lipin, W. The Nathusius electric steel furnace ... 227
List, Elmer. Electrolytic determination of lead ... 135
Lohr, J. M., and Bancroft, Wilder D. Copper zinc alloys..... 690
Lorentzen, H. Bie. Electric shaft furnace design ... 71
Longmuir, Percy. Problems of wire-drawing ... 743
——Robinson, W. H. An analysis of steel-works yields from practice. 741
Louvrier, Francis. Causes of the practical non-success of electric furnaces in treating zinc ores.... 747
Lovereridge, F. H., Sharp, C. H., Bur-
Lowden, H. B. A new alime density table ... 369
Lucas, A. F. Geology of Calcasien sulphur mines and sulphur oil fields of the coastal plains..... 80
Lucas, F. E. Coke..... 809
Lyon, D. A. Reduction of iron ores in the electric furnace..... 587
——Some observations on the amount of combined carbon in pig iron. 512
——The use of electric furnace pig iron in the open hearth furnace. 539

——Langenberg, F. C. A microscopic study of California electric furnace pig iron..... 457

MARSHALL, A. E. Fused silica ware, its manufacture, properties and uses in the chemical industries 248
Mathers, Frank C., and Overman, O. Ralph, lead plating..... 298
Mathesius, W., and Hilpert S. Magnetic properties of manganese and nickel steels..... 742
Mathewson, E. P. The development of the reverberatory furnace for smelting copper ores..... 591
Maynard, Geo. W. Early history of chemistry at Columbia University and some early relations between German and American chemists 516
McDonald, Bernard. The Parral tank system of slime agitation..... 434
McFarland, David C., and Hadley, Harry F. The use of the higher phenols in testing for free lime in Portland cement 613
McKay, LeRoy W. The action of boiling sulphuric acid on platinum. 604
McKenna, Chas F. Hardness of plasters and cements, and a simple chronographic apparatus for recording set 82
McLeod, D. L., Stansfield, A., and McMahon, J. W. Electric resistivity of fire bricks at high temperatures 746
McMahon, J. W., Stansfield, A., and McLeod, D. L. Electric resistivity of fire bricks at high temperatures 746
Melsom, S. W. British comparative dry cell tests 365
Mercer, H. T. Rock-house practice at copper range properties..... 680
Miller, C. F., Walker, L. V., and Bancroft, Wilder D. Carborundum. 685
Miller, W. Lash. Diffusion and E. M. F. produced by centrifugal action. 297
Mitchell, Ralph W., Baker, Russell E., and Frary, Francis C. The direct production of positives in the camera by means of thiourea and its compounds..... 613
More, Chas., James and Baxter, Gregory Paul. Automic weight of phosphorus 623
Moss, Lincoln DeG. Belt conveyors.... 347

NEUMARK, Aug. S. The production of oxygen in the workshop.... 109
Northrup, E. F. Temperature and the properties of matter..... 352
——Resistivity determination of magnesium by Kelvin double bridge method 277
Nystrom, E., and Leffler, J. A. Electric furnace pig iron at Trollhattan. 413

OLSEN, J. C., and Ratner, A. E. The decomposition of linseed oil during drying 608
Overman, O. Ralph, and Mathers, Frank C. Lead plating 298
Ovitz, F. K., and Porter, Horace C. The spontaneous combustion of coal. 645

PALMAER, W. Bicalcic phosphate fertilizers 581
Parmelee, H. C. Concentration of flotation of dry ore pulp..... 132
——Cyaniding by continuous decantation in clear county, Colorado. 27
——Zinc ore-dressing in Colorado..... 527
Pape, W. A. C. Why do many solids float on their liquids?..... 392
Patrick, Walter A., and Walker, Wm. H. Determination of oxygen in iron in electric vacuum furnace..... 629
Patterson, G. W., and Cheney, L. B. Contact sulphuric acid from brimstone 630
Paul, F. W. A modification of the pig iron, scrap and ore process..... 741
Payne, C. O. Roll-crushing..... 170
Perkin, William Henry. Permanent fireproofing of cotton goods..... 636
——Synthetic rubber 648
Perley, G. A., and Leighton, Alan. Preliminary studies on direct photographic positives 613
Petinot, N. The electrical steel furnace and the use of titanium in foundry practice 713
Phalen, W. C., and Laney, F. B. Manufacture of sulphuric acid at Ducktown, Tenn. 405
Philip, Arnold. Corrosion..... 224
Phillips, A. J., and Klein, A. A. Magnesia in Portland cement..... 612
Porter, Horace C., and Ovitz, F. K. The spontaneous combustion of coal. 645
Pring, J. N., and Fairlie, D. M. Synthesis of hydrocarbons 586
Pulsifer, H. B. The important factors in blast-roasting 153, 207

RANDALL, Merle. Standard of Radio-activity 297
Randolph, C. P. Thermal resistivity of insulating materials 287
Ratner, A. E., and Olsen, J. C. The decomposition of linseed oil during drying 608
Rattray, J. High-tension equipment for electrochemical plants 290
Raymond, R. W. Discussion at San Francisco on Alaska coal mines. 128
Read, Henry L., and Tucker, Prof. S. A. Fixation of nitrogen by alumina and carbon 745
Reibling, W. C., and Reyes, F. D. The physical and chemical properties of Portland cement..... 612
Reich, W. I. Oxy-acetylene welding.... 441
Reinhardt, S. A., and Sauveur, Albert. Case hardening of special steels. 813
Reyes, F. D., and Reibling, W. C. The physical and chemical properties of Portland cement..... 612
Richards, J. W. Steel.....265, 330, 392
——Gas circulation in electric pig iron furnaces 289
——The Schumacher briquetting process 165
——"Pig steel" made directly from ore in the electric furnace..... 397
——The Japan excursion of the American Institute of Mining Engineers 15
——The vaporization of metals..... 754
——Exothermic steel 712, 775
——Proposed code of ethics of the American Institute of Chemical Engineers 776
Richards, Theodore W., and Daniels, F. The electrochemical behavior of very concentrated thallium amalgams 619
Richardson, H. K. The modern dry-cell, its development, construction and manufacture 531
Robertson, G. A. Hydraulic classification. 793
Robertson, T. W., and Allen, Irving C. Determination of sulphur in oils. 635
Robertson, T. D. The position of the induction furnace 128
Robinson, F. W. Demonstration of new apparatus-determining carbon in iron and steel 295
Robinson, W. H., and Longmuir, Percy. An analysis of steel-works yields from practice 741
Robinson, W. O., and Frey, W. H. The use of ground rocks and ground minerals as fertilizers 735
Rogers, F. Troostite..... 774
Rose, T. Kirke. The annealing of coinage alloys 724
Rosenhain, W. Nomenclature of alloys.. 226
Ross, William H. The extraction of potash from silicate rocks..... 731
Ross, Alexander D. Heusler alloys..... 403
——and Gray, James G. Magnetism at low temperatures 402
Ruhoff, Otto E. Magnetic separation of zinc iron ores as found in southwestern Wisconsin..... 278
——and Hambuechen, Carl. Dry cells. 685
Ruthenburg, Marcus. A new method of dressing Cornish tin ores..... 411

ST. JOHN, A. D., and Curtman, L. J. The determination of the sensitiveness of the hydroxide reactions for the common metals.... 645
——and Curtman, L. J. A study of the sensitiveness of the head and lead dioxide tests for manganese with special reference to the interference of iron 645
Saunders, William L. Culture in the education of engineers..... 427
Sauveur, Albert, and Reinhardt, G. A. Case hardening of special steels. 813
Schmidt, Walter A. The control of dust in Portland cement manufacture by the Cottrell precipitation processes 611
Schoch, Engene P., and Browne, Denton J. Electro-analysis with acidified chloride electrolytes 684
Scholz, Frederick Wm. The Teaching of technical German in engineering schools 213
Schramm, A. Double reflecting Galvanometer for taking recalescence points 250
Schulte, Walter B. The influence of cinders of the corrosion of iron imbedded in clay 646
Sharp, C. H., Lovereridge, F. H., Brown, J. W., and Burgess, C. F. Tentative report of American Electrochemical Society committee on Dry Cells 361
Shepard, Frank E. Progress in mill design 215
Sherry, R. H. Coarse crystallization produced by annealing low-carbon steel 666
Shook, G. A. Radiation pyrometry..238, 334, 534
——Determination of very high temperatures 478
——Calibration of radiation pyrometers 416
Skillman, V., and Corse, Wm. M. Manganese bronze tests..... 595
Skinner, Lewis B. A shaking inclined-screen hydraulic classifier..... 343
Smalley, Frank N. The determination of total fatty acids in cottonseed foots 607
Smith, John J. The power required for refrigeration 657
Smith, T. O., and Curry, B. E. A study of soil potassium 735
Somerville, A. A. Electrical resistance of sulphates 682
——Electrical resistances of powdered conductors-variation with temperature 485
——Variation of the electrical resistance of oxides with temperature. 422
Speer, Ellwood B., Chow, C., and Chesley, A. L. Carbon in electrolytic copper 685
Stansfield, A., McLeod, D. L., and McMahon, J. W. Electric resistivity of fire-bricks at high temperatures 746
Stone, Geo. C., and Corning, C. R. The present situation in the American Institute of Mining Engineers.. 512
Stoughton, Bradley. Preliminary investigation of primary crystallization and subsequent physico-chemical permutations in iron-carbon alloys containing more than 4% carbon 802
——Titanium treatment of cast iron... 801
Stromeyer, C. E. Recent researches on corrosion of iron ann steel..... 790
Sturtevant, L. H. Cement grinding..... 380
Sweetland, Ernest J. Recent improvements in filtration methods..... 114
——The "clam shell" filter..... 493
Sweetser, R. H. Blowing in a blast furnace 803
Sykes, W. Power supply to electric furnaces 290

TAKE, E., and Heusler, F. Heusler alloys 403
Talbot, Benjamin. Talbot process for improving soundness in ingots.. 772
Taussig, Rudolph. Large electric furnaces. 686
Thiessen, Reinhardt. The constitution and genesis of certain lignites and sub-bituminous coals 691
Thompson, M. DeKay. Gravity and electromotive force 70
——On the simultaneous electrolytic deposition of copper and zinc from various solutions 458
Thwing, Charles Burton. Control of small electric furnaces 586
Traylor, S. W. Heavy-duty crushing rolls 378
Tucker, S. A., and Read, Henry L. Fixation of nitrogen by alumina and carbon 745
——and Yang, Y. T. Nitrogen and carbides 584
Tucker, A. E. The joining of metals.. 725
Turnbull, R. Furnace electrodes practically considered 289
Turner, T. Oxygen in brass..... 726
——Heating of alloys in vacuo..... 225
Turrentine, J. W. Distillation of kelp... 734
——The salines of the United States as a source of potassium salts..... 733

UNGER, Magnus. The action of electro-mechanical forces on the bath of induction furnaces..... 263

VANIER, George P. Combined potash bulb and drying tube..... 380
Viola, B. Condensers and condensation for vacuum plants 366
——Vacuum pans with jackets..... 102
——Calculation of vacuum pans..... 31
——The evaporative capacity of lead-lined copper coils..... 267
——Condensers and condensation for vacuum plants 407
Vogel, Felix A. Sintering and briquetting of flue dust..... 164
Vom Bauer, C. H. Electric induction and resistance furnaces 600
——The position of the induction furnace 14

WAGGAMAN, W. H. Alunite as a source of potash..... 734
Walker, T. L. Metallurgy of molybdenum 110
Walker, William R. The electric furnace as a possible means of producing an improved quality of steel.... 371
Walker, L. V., Miller, C. F., and Bancroft, Wilder D. Carborundum.. 685
——and Clement, J. K. Electrolytic method for the prevention of the corrosion of iron and steel..... 646
Walker, Wm. H., and Patrick, Walter A. Determination of oxygen in iron in electric vacuum furnace..... 629
——and Gegenheimer, Ralph E. Cost of hypochlorite 627
Walter, Bruce, Drying air for blast furnaces 471

Wanjukoff, Mr., and Hofman, H. O. The decomposition of metallic sulphates at elevated temperatures. 596
Wanjukow, W., and Hofman, H. O. Decomposition temperatures 172
Watts, Oliver P. Corrosion of iron by sulphuric acid 300
Weber, M. G. Effect of electric current on cyanide solutions and a simple way for their preparation 152
Wedekind, E. Magnetism and stoichiometry 402
Wedge, Utley. American sulphuric acid industry 631
———The sulphatizing roasting of copper ores and concentrates 593
Weintraub, E. Boron, its compounds and uses 620
Weiss, Howard F. Tests to determine the commercial value of wood preservatives 608
Weiss, John Morris. Refining light oil.. 691
Weiss, Pierre. Magnetism of iron-nickel, iron-cobalt and nickel-cobalt alloys 404
Wellman, S. T. Electric steel for rails.. 372
Wentworth, Henry A. Electrostatic concentration 167
West, J. G. Typical analyses of iron blast furnace gases 713
Whipple, George C., and Whipple, Melville C. Mill scale as a cause of corrosion 646
Whipple, George C., and Melville C. Whipple. Mill scale as a cause of corrosion 646
Whiting, Jasper. The commercial development of chemical processes.... 627
Whitney, W. R. Presidential address... 292
Wilderman, E. A new mercury-cathode cell for the electrolysis of alkalis and salt 628
Wilderman, M. Alkali and chlorine proof ebonite 629
Wile, R. S. An electric furnace for the treatment of tin dross, concentrates from cyanide mills and other metallurgical work..... 495
Wilke, William. Combination of the contact process with the lead chamber 633
Wilson, F. B. Methods of balancing chemical reaction equations..... 94
Windszus, Paul. Resistance of Refractory ware against abrupt changes of temperature 662
Withrow, James R. The effect of "lime-sulphur spray manufacture" on the eyesight 610
Woiciechowski, Bruno. The electrolytic determination of lead in large and small amounts, using a gauze cylinder anode 108
Wright, Edward T. Jigging unsized ores. 759

YONG, Y. T., and Tucker, S. A. Nitrogen and carbides 584

ZAPFFE, Carl, and Barrows, Walter. Cuyuna iron ore range 802